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**AN EVALUATION OF PHARMACY EDUCATION AND
PRE-REGISTRATION TRAINING**

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Doctor of Philosophy

THE UNIVERSITY OF ASTON IN BIRMINGHAM

March 1998

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THE UNIVERSITY OF ASTON IN BIRMINGHAM

SUMMARY

AN EVALUATION OF PHARMACY EDUCATION AND
PRE-REGISTRATION TRAINING

Mandeep Singh Mudhar

Submitted for the degree of Doctor of Philosophy, 1998

This thesis covers two major aspects of pharmacy education; undergraduate education and pre-registration training. A cohort of pharmacy graduates were surveyed over a period of four years, on issues related to undergraduate education, pre-registration training and continuing education. These graduates were the first-ever to sit the pre-registration examination. In addition, the opinions of pre-registration tutors were obtained on pre-registration training, during the year that competence-based assessment was introduced.

It was concluded that although the undergraduate course provided a broad base of knowledge suitable for graduates in all branches of pharmacy, several issues were identified which would require attention in future developments of the course. These were;

1. the strong support for the expansion of clinical, social and practice-based teaching.
2. the strong support to retain the scientific content to the same extent as in the three-year course.
3. a greater use of problem-based learning methods.

The graduates supported the provision of a pre-registration continuing education course to help prepare for the examination and in areas inadequately covered in the undergraduate course. There was also support for the introduction of some form of split branch training. There was no strong evidence to suggest that the training had been an application of undergraduate education.

In general, competence-based training was well regarded by tutors as an appropriate and effective method of skill assessment. However, community tutors felt it was difficult to carry out effectively due to day-to-day time constraints. The assistant tutors in hospital pharmacy were found to have a very important role in provision of training, and should be adequately trained and supported. The study recommends the introduction of uniform training and a quality assurance mechanism for all tutors and assistants undertaking this role.

Key words:

Four-year pharmacy course, pre-registration examination, pre-registration tutor, competence-based training and assessment, continuing education.

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DEDICATION

**To my parents, for the sacrifices they have made in their life
to ensure my education**

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GLOSSARY OF TERMS

Abbreviation

ABPI	Association of the British Pharmaceutical Industry
AGM	Annual General Meeting
BMJ	British Medical Journal
BPC	British Pharmaceutical Conference
BPSA	British Pharmaceutical Students Association
BTC	Boots The Chemists
CAL	Computer aided learning
C&D	Chemist and Druggist
CE	Continuing Education
CPPE	Centre for Pharmacy Postgraduate Education
CRE	Commission for Racial Equality
DOH	Department of Health
EC	European Community
EEA	European Economic Area
GP	General Practitioner
HEFCE	Higher Education Funding Centre of England
HEQC	Higher Education Quality Council
IPMI	Institute of Pharmacy Management International
MCA	Medicines Control Agency
MCQ	Multiple Choice Questions
NHS	National Health Service
NPA	National Pharmaceutical Association
NVQ	National Vocational Qualification

OSCE	Objective Structured Clinical Examination
OTC	Over The Counter
OU	Open University
PBL	Problem Based Learning
PCCAL	Pharmacy Consortium for Computer Aided Learning
PJ	Pharmaceutical Journal
PSGB	Pharmaceutical Society of Great Britain
RPSGB	Royal Pharmaceutical Society of Great Britain
SBTE	Structurally Based Therapeutic Evaluation
SCOPE	Steering Committee on Pharmacy Postgraduate Education
SCPPE	Scottish Centre for Pharmacy Postgraduate Education
SPSS	Statistical Package for Social Science
SPSS/DE	Statistical Package for Social Science/ Data Entry
UCAS	University Central Admission Service
UKCPA	United Kingdom Clinical Pharmacy Association
YPG	Young Pharmacists Group

CHAPTER 1

PHARMACY UNDERGRADUATE EDUCATION

This introduction chapter discusses the historical development and current provision of pharmacy undergraduate education, with consideration to the overall developments in UK higher education.

The chapter also considers RPSGB policies affecting pharmacy education and the provision of pharmaceutical education around the world. The chapter concludes with a review of previous educational research in the areas of pharmacy and medicine, some of which has provided the impetus for the work in this study.

1.1 Introduction to the study

This study is primarily an evaluation of pharmacy undergraduate education and pre-registration training. In the early 1990's, two major changes affecting pharmacy education and training were instigated. Firstly, the movement towards an extended four-year undergraduate pharmacy degree course and secondly, a change to the nature of the pre-registration year to incorporate competency assessment and a formal examination at the end of the training year. The move to an extended degree course had been partly precipitated by increasing demand for it to reflect the changing nature of pharmacy practice. Although the pre-registration training year had evolved over a period of three decades from an 'apprenticeship' type process to a fairly structured experiential training year, the changes were designed to make the training process and its objectives more clearly defined, supervised and assessed and in general, produce a higher standard of pharmacist. During this period, there was also continuing debate about the nature of vocational higher education, in particular, the balance between underpinning knowledge and the development of vocational and generic skills. While pharmacy was undoubtedly strong on the scientific base, it was less clear as to whether the degree programme was fully meeting the needs of future professionals in terms of practice and general skills. A fundamental requirement for these major changes affecting education and training was a clearer definition of current and future pharmacy practice and its' educational and training needs. This study was undertaken primarily because it was felt that although these momentous changes had been, or were going to be implemented, there seemed to be little or no research on;

- a) the extent and manner to which the undergraduate course can improve the provision of pharmacy education and thereby improve the quality and knowledge base of the graduate.
- b) The relationship between undergraduate education and pre-registration training as perceived by pharmacy graduates.
- c) the appropriateness of the changes made to the training year in relation to the experience and views of pre-registration tutors.

Extensive literature reviews showed that the changes affecting pharmacy education and training had been implemented by the Royal Pharmaceutical Society of Great Britain (RPSGB) after consultation with either Heads of Schools of Pharmacy or a small number of employers, tutors and trainees.

However, there had been no research on a UK-wide basis to firstly, assess the opinions of new pharmacy graduates or secondly, pre-registration tutors on education and training.

These groups were chosen mainly because;

- a) a new graduate would not only have the most accurate and recent view of the undergraduate course, but also because, they are able to judge their knowledge base in relation to the workforce demands.
- b) the pre-registration tutor is usually the first pharmacist who observes and gauges the newly-graduated pharmacy trainee.
- c) the pre-registration tutor will be the individual to actually implement and carry out a major change such as competence-based training and assessment.

The study was then extended to survey the same group of new graduates during and soon after their training year and then three years after registration to follow up issues explored in the first study of this group in 1992. The pre-registration tutors were surveyed during the 1993-1994 training year, as this was the first year of the new competency system. The first two chapters, Chapter One and Chapter Two, provide a historical and current review of pharmacy undergraduate education and pre-registration training respectively. In addition, both chapters present a review of literature relevant to these two aspects. Chapter Three presents the methodologies used in social research and in this study. The remaining chapters present the results of the surveys undertaken in this study from 1992 to 1997.

1.2 Higher Education in the UK

In 1997, The National Committee of Inquiry into Higher Education appointed by the Secretaries of State for Education and Employment in England, Wales, Scotland and Northern Ireland produced the Higher Education in the Learning Society Report. This report, commonly called the 'Dearing Report' after the chairman of the Committee, made far-reaching recommendations on how the purposes, shape, structure, size and funding of higher education should develop to meet the needs of the United Kingdom over the next 20 years. The Committee believes the aim of higher education should be to sustain a learning society. The four main purposes which make up this aim are (1):

- a) to inspire and enable individuals to develop their capabilities to the highest potential levels throughout life, so that they grow intellectually, are well equipped for work, and can contribute effectively to society and achieve personal fulfilment.

- b) to increase knowledge and understanding for their own sake and to foster their application to the benefit of the economy and society.
- c) to serve the needs of an adaptable, sustainable, knowledge-based economy at local, regional and national levels.
- d) to play a major role in shaping a democratic, civilised, inclusive society.

Higher education in the UK has expanded opportunities to the extent that 1.6 million people are students in higher education. Almost a third of young people now go into higher education from school and college (1). The intention to increase and widen the access to higher education was first put forward in the Government White Paper 'Higher Education, Meeting the Challenge' in 1987 (2). The 1987 White Paper acknowledged that higher education had a crucial role in helping the nation to meet the economic and social challenges of the final decade of this century and beyond. The main elements of this paper were to plan an increase in student numbers in higher education, renew emphasis on the quality and efficiency of higher education provision, give scope for better management of polytechnics and colleges and improve financial accountability and increase effectiveness of universities (2). However, soon after the 1987 White Paper, the Government produced a second White Paper, 'Higher Education, A New Framework' (1991) which set in place major structural changes to the funding and quality assessment of higher education (3). In this document, the Prime Minister at the time, John Major, declared that it was the Government's intention to enable one in three young people to pursue higher education by the year 2000 (3). The framework put in place from the recommendations of this 1991 White Paper would achieve this aim of increase in access to higher education. At the time, the Government projected an increase in full-time equivalent students in higher education in Britain from 739,000 students in 1989 to 1.17 million students in the year 2000. The 'Dearing Report' shows that latest student numbers have exceeded this projection set in 1991. The 1991 White Paper stated the Government's intentions to bring universities, polytechnics and major colleges of higher education into a single structure for higher education. The framework would permit polytechnics and some major institutions to develop the title of university.

In addition, there would be the establishment of Higher Education Funding Council (HEFCs) within England, Wales and Scotland to distribute public funding to all these institutions for teaching and non-specific research (3).

Each of the HEFCs would have their own quality assessment units to advise on relative quality across the institutions. In addition, there would be external scrutiny of the quality control arrangements of UK higher education institutions by a UK-wide quality audit unit developed essentially by the institutions themselves (HEQCs) (3). The Higher Education Quality Council (HEQC) was set up to audit the operation of the quality assurance systems of individual universities (4). A report titled, Higher Education Futures, published by the Royal Society in 1993 also made many recommendations on the future of scientific and vocational higher education. The Study Group who produced this report included eminent scientists and academics, and therefore, also considered the current problems faced by academic institutions and made appropriate recommendations from this perspective. This report supported the HEQCs intentions to audit the steps taken by individual institutions to assess quality (5). Many of the individual institutions in the UK have also developed their own course validation processes, the universities' own Academic Audit Units (6). These will facilitate the audits by the HEQCs. In addition, the HEFCs in each of the home countries set up a further quality assessment (teaching assessment) method from April 1995 which is ongoing. In England for example, this teaching assessment method involves (7);

- a) Assessment against the subject provider's (course provider) aims and objectives.
- b) Assessment of the student learning experience and student achievement.
- c) Assessment by peer review.
- d) Combination of internal and external processes - a self assessment prepared by the subject provider; an assessment visit by external assessors.

The quality of the student learning experience and student achievement is assessed as one of the fundamental objectives of the quality assessment method. The education provision with regard to the student is graded according to the extent the objectives set out by each course provider have been met.

The aspects of provision for the student include;

1. Curriculum design, content and organisation.
2. Teaching, learning and assessment.
3. Student progression and achievement.
4. Student support and guidance.
5. Learning resources.
6. Quality assurance and enhancement.

In the Higher Education Futures Report, the Royal Society Study Group have expressed doubts as to whether conclusions taken from inspections of institutions during this quality assessment will be sufficiently reliable (5).

Despite increasing numbers of students in higher education, many concerns facing higher education have been expressed recently. Some of these are;

- a) the fall in unit of funding per student by 40 per cent (1).
- b) the capping, by the previous Government, on any further growth in publicly-funded full-time undergraduate student numbers, and subsequent withdrawal of almost all public funding for capital expenditure (1).
- c) the introduction by the current Government of a student tuition fee of £1,000 from 1998 from the recommendations of the 'Dearing Report' (1).
- d) substantial academic staff redundancies were currently in prospect and many staff felt their contributions to the achievement of higher education are under-valued (1).
- e) a relative downdrift of academic salaries, coupled with rapidly increasing staff:student ratios (5). In pharmacy for example, the staff:student ratio of 1:8 enjoyed in 1970 is nearer 1:20 in 1997 (8)
- f) a widespread perception that in recruiting and promoting staff, universities emphasised research at the expense of teaching (5). This may affect the quality and nature of teaching of vocational professions such as pharmacy.

The provision of pharmacy undergraduate education has to be considered against the background of these Governmental policies and developments.

1.3 The relationship between pharmacy education and the Government

The provision of pharmacy undergraduate education in the UK is regulated and monitored to differing extents by three major bodies. These are the funding councils, respective universities and the RPSGB. As discussed, in Britain, the funding for higher education is based on each student in the higher institution and provided by public funds distributed by the funding councils which were set up by the Government. The public funding of education has to be tightly controlled as there are other Governmental priorities like health and the social welfare system. The Council of the RPSGB has previously expressed concern that over the past decade, per capita public-funding for teaching in higher education has fallen markedly in real terms.

Although there had been an expansion of students leading to opportunities for increased efficiency in universities, the Council expressed concern to the Chancellor of the Exchequer that the budget settlement for 1996-7 would do great harm to the universities compromising the quality of educational experience and future capabilities of students (9). In 1993, the funding councils grouped pharmacy for funding in the 'subjects allied to medicine' academic subject category (ASC). Following strong representation by the RPSGB giving overwhelming evidence for its reclassification into the science ASC, pharmacy was put in this category for the purposes of funding from 1994/95 onwards. This re-classification of pharmacy was very important for securing a higher level of funding (10). However, currently, pharmacy is still funded in the 'subjects allied to medicine' in Scotland. The classification of pharmacy into a science category and its' repercussions on the balance between the science and practice content in pharmacy courses will be discussed later.

In 1997, the Council of the RPSGB adopted a set of main goals for pharmacy education which were to be used to focus the Society's response to policies and decisions announced by the Government, the higher education funding councils and universities (11).

The agreed aims were as follows (11);

1. An end to year-on-year reduction in per capitem funding of teaching in UK universities.
2. For most components of the degree course, continued funding of pharmacy as a laboratory/workshop-based subject
3. For the clinical components of the degree course, higher funding from the Department of Education and/or the NHS to enable teaching of students in both primary and secondary care settings, alongside students of other health care professions.
4. Improved conditions of, and rewards for, service for members of academic staff of UK universities, to attract pharmacists into careers as the pharmacy academics of the future.
5. A system of higher education committed to the development and maintenance of the standards of academic achievements of graduates.
6. A system of higher education committed to the development of the personal and inter-personal skills of graduates.
7. The continuation of research activity within all schools of pharmacy
8. Recognition and commensurate funding of research in the pharmaceutical sciences and pharmacy practice, both within schools of pharmacy and elsewhere.

1.4 Early development of pharmaceutical education

In 1841, the Pharmaceutical Society of Great Britain was founded with the aim of benefiting the public and elevating the profession of pharmacy, by laying out proper means of instruction (12). From its foundation, the Pharmaceutical Society has had an unbroken commitment to raising the standard of pharmaceutical education. The promotion and advancement of education is one of the founding principles of the charter of the Society. The Society's School of Pharmacy was set up in 1842 to provide a complete course in the basic sciences and their application to pharmacy. The 1868 Pharmacy Act made the Society's Minor examination the portal through which all newcomers to the trade had to pass. The Minor examination became the test for admission to the register. The Act provided a stimulus by creating a widespread demand, but the demand was for the rudimentary and mechanical knowledge required to pass the Minor examination. There was a marked increase in the number of candidates for the examination, in fact, many more than could be accommodated in the Society School (13). The increased demand created private 'cramming' colleges who simply claimed to help students pass the examination. Many of these private schools openly promoted themselves as enabling a student to pass the Minor examination. By 1900, the number of private schools had increased to twenty-two and were not only in competition with each other but also with many public institutions. The public institutions, primarily technical colleges, were created and funded by County Councils and by 1899, courses for pharmacy students were available in fifteen of them. By the end of the nineteenth century, there were as many as forty-five institutions offering courses in pharmacy, but the percentage of failures in the Minor examination had continued to increase over the previous three decades (13). A historian, Melvin P Earles, commented that the 1868 Act depressed pharmaceutical education in Britain to a level from which it took more than 50 years to recover (14). The reason for this was that the Pharmaceutical Society offered no solution to the problem of how all pharmaceutical students were to receive uniform training, a problem not solved for half a century. Although apprenticeship was the principal means of training, it was clear that uniform academic training was required to accompany and supplement it for all students taking the examination. The PSGB made numerous efforts to obtain powers through parliament to control examinations and impose compulsory courses of study. However, the bills to obtain this power were rejected in 1887, 1888, 1889 and 1891 (13).

The 1908 Act finally gave pharmacy education a higher status, by giving the PSGB the power to impose compulsory courses of study, regulate the nature of examinations and create a provision to admit all registered chemists to membership of the Society. In 1919, the PSGB divided the Minor examination and introduced the principle of compulsory course of study. By 1920, the scheme of pharmaceutical education divided the chemist and druggist qualifying examination into two parts, a pure science section (chemistry, physics and botany) and an applied pharmaceutical section (materia medica, pharmacy, and the translation and dispensing of prescriptions, and poisons law). Attendance at approved courses of instruction was a necessary preliminary to entry for the examination and an apprenticeship of 4,000 hours was essential. The first link between the Society's School of Pharmacy and the University of London came in 1901 and by 1924, a university degree in pharmacy had been approved. The main problem which arose was how graduates of the University could be admitted to the pharmaceutical register. The solution was devised by altering the pharmaceutical chemist qualification so as to be obtainable after a three years academic course and an apprenticeship reduced from 4,000 to 2,000 hours which could be taken before or after the final University examination. By this means, an intermediate BPharm became the preliminary scientific examination and the BPharm as the pharmaceutical chemist examination. The Society retained total control of the examination of forensic pharmacy, which it conducted outside the academic institution, and which had to be passed before the pharmaceutical chemist diploma could be awarded.

In August 1925, three principal changes were brought into regulation. Firstly, the standard of the preliminary examination was raised and secondly, it was separated from the qualifying examination so that the two could not be taken at one sitting. Finally, a student after completing his preliminary examination would have the choice of proceeding by means of a one-year course to obtain the chemist and druggist qualification (with 4,000 hours apprenticeship) or by means of a two-year course to obtain the qualification of pharmaceutical chemist (with 2,000 hours of apprenticeship). The Council appointed a committee to review pharmacy education which produced a report in 1930. In this report, the committee recommended that because it felt there was a widening gap between the requirements of retail practice in pharmacy compared to hospital and industry, the chemist and druggist qualification should be used to produce retail pharmacists and the pharmaceutical chemist qualification used to produce pharmacists for hospitals and manufacturing laboratories.

This philosophy was rejected and by 1935, new regulations were introduced. Physiology was added to the chemist and druggist qualification for which a course of one year was prescribed. A person taking this qualification could now proceed directly to the higher qualification, unlike the 1925 regulation.

The subjects of the London degree and the pharmaceutical chemist qualifying examination were altered to pharmaceutical chemistry, pharmacy, physiology, pharmacognosy and forensic pharmacy and the vocational character of the examination increased. In 1932, the Council made clear its intentions to deny recognition to new private schools and phase out existing ones and by 1949, all had stopped operating (13). Some of these were taken over by City technical colleges, which now provided recognised pharmacy education. By 1941, an all-graduate profession had become a realistic aspiration and the policy for the immediate future was to introduce one course for all students. This could then facilitate the establishment of one statutory register of persons eligible to practice pharmacy. The admission to the register would be through an examination conducted by the Society or through a university degree, with more emphasis on a degree. However, the chemist and druggist qualification continued until 1952 and was finally abolished in the Pharmacy Act of 1953.

The two year pharmaceutical chemist qualification continued until 1962, when a three year course enabling a student to take the pharmaceutical chemist examination (PhC) as the sole qualifying diploma was instigated as one of the methods of entering the profession. The other method was a university degree. The subjects to be studied and examined on Part I of the Ph.C diploma were biology, chemistry and physics and for Part II, pharmaceutical chemistry, pharmaceutics, pharmacognosy, physiology and pharmacology (15).

Since 1st September 1967, all new pharmacy students have been required to read for a degree in pharmacy, as an external qualification, before being eligible for registration (13). In 1967, a total of 17 schools of pharmacy offered a degree course in pharmacy leading to either a BPharm or BSc degree. In 1988, the school of pharmacy at Heriot-Watt University closed down leaving at that time 10 universities and 6 polytechnics or institutes offering a pharmacy degree course. There were seven universities in England, and one each in Scotland, Wales and Northern Ireland. There were a further five polytechnics in England and one Scottish central institution (16).

Following the 1991 White Paper 'Higher Education, A New Framework', all the polytechnics and the institution offering pharmacy degree courses were converted to universities. The pharmacy degree course in Scotland is four years in length but all the others schools were three years until 1997 when they were extended to four years. The pharmacy course is similar to other professions in that education and examination is provided by universities but accredited on a regular basis by the RPSGB.

1.5 The Nuffield report on Pharmacy - undergraduate education (16)

In October 1983 a Committee of Inquiry appointed by the Nuffield Foundation was asked by the then, PSGB, to consider the present and future structure of the practice of pharmacy and to review the education and training of pharmacists accordingly. This resulted in the Nuffield report, still regarded as the first independent report providing far reaching recommendations on the future development of pharmacy education. Some information for this report was collected by asking schools of pharmacy to submit evidence about their provision of pharmacy education. Information was also collected by the Committee from different groups of people. The UK Committee of Heads of Schools of Pharmacy stressed that the degree course needed to be strongly science-based. The heads considered that the core of the course should be based on fundamental scientific areas integrated with knowledge of the drug processes and drug therapy and that schools should offer a range of specialist options based on the students' academic strengths and research interests. There were other proposals offered to the Committee of Inquiry for changing the scientific content of the course to increase its vocational usefulness particularly in the clinical role. There was considerable support for reducing and changing the nature of chemistry taught to provide more time for pathology and therapeutics. The pharmaceutical industry voiced satisfaction with the course at the time and did not wish for any major changes. The ABPI felt that that the scientific content was sufficient and essential if the needs of industry were to be met.

The main criticism that was made to the Committee was that present courses equipped people to be scientists but not to be practising pharmacists. The criticism implied that what was taught was not what a working pharmacist was called on to do. Other criticism indicated that graduates produced were without the ability to communicate which was an essential part of their work. Some graduates commented on the huge disparity between what the real world of pharmacy was compared to what the course had led them to expect.

The opinions received by the Committee accepted that the course should be science-based but argued for a much greater vocational content. In particular, the teaching of pharmacy and its relation to people and the teaching of clinical pharmacy within the core of the course. The major criticism of teachers in schools of pharmacy was their lack of knowledge of what the practical world of pharmacy was like. Some of the teachers were not pharmacists and many of the teachers, both pharmacists and non-pharmacists, were said to have mainly an academic interest in their own research disciplines. There were suggestions for the reduction of lectures and laboratory work in favour of group discussions, CAL simulations and visits to hospitals.

The Committee of Inquiry made several reflections on the information and criticisms it collected about pharmacy education. The Committee felt that the function of an educational course was not to turn out graduates who were fully competent to practice the day after graduation but to provide a broad basis of knowledge and a scientific approach to problem solving. The Committee felt that attention should be focused on ensuring that the science taught was the appropriate science and taught in the most effective way. The report indicated that teaching of science in the course must be applied in that it would be relevant to pharmacy and must relate to all aspects of the work, behavioural and pharmaceutical. The use of seminars or small-group teaching was considered an essential part of the course and the development of CAL programs was encouraged. It also recommended that teaching methods entail active student participation and reduce emphasis on lectures. An important statement made by the report was that there was advantage in the course providing specialisation options in the final year which could be structured to allow a student to study scientifically one or more areas of competency relevant to an area of future interest in the profession.

The present study has made use of the Nuffield Report as one of its focal reference points. The Nuffield Report made definitive recommendations on pharmacy education at the time based on information received from members of the profession, from consultation with heads of schools and from the then, PSGB. It is important to assess how far the recommendations of this report have been adopted by schools of pharmacy in their provision of pharmacy education, how much education has changed to reflect the Report's recommendations and whether the views expressed at the time are still held today.

1.6 Pharmacy undergraduate education and the RPSGB

The RPSGB is delegated by Parliament a responsibility for the quality assurance of UK pharmacy degree courses. It is also responsible for ensuring that UK pharmacy degree courses fulfil the requirements of basic pharmacy education and training set out by EC directive and thereby enjoy recognition throughout the EEA. However, the power of the Society is limited by the independent status of universities, statutory powers of the higher funding education councils and the reality of finite resources available to higher education. The RPSGB is therefore only a quality assurer of the expenditure and endeavour of the pharmacy degree course (4). The Council is kept informed by the HEFCs and related bodies about impending issues affecting the provision, funding or quality criteria for pharmacy education and courses. The Council can therefore make representations to the HEFCs and HEQC when appropriate about their stance to any issues affecting pharmacy education. For example, in 1996 the Council responded to a HEQC consultation document on the attributes expected of graduates. The response pointed out that ideal graduate qualities were being hampered by a number of adverse factors in the present climate. These included poor literacy and numeracy of many school leavers, the debt burden on many students, the greatly diminished unit of resource for teaching in higher education and the psychological dominance within universities of the research assessment with little regard for protecting the quality of outcome (17). An important role of the RPSGB regarding education is the accreditation of each pharmacy undergraduate course in the UK.

1.6.1 The RPSGB accreditation guidelines for the pharmacy course previous to 1997

Each school of pharmacy may only continue providing the pharmacy degree if it meets the guidelines set out by the RPSGB and if it is approved when the RPSGB make their regular accreditation visit. The Pharmacy Act, 1954, and the RPSGB Byelaws, Section XX (4) give the Council of the RPSGB the statutory responsibility and right to approve degrees granted in respect of pharmacy as fulfilling the academic requirement for registration as a pharmaceutical chemist in Great Britain (18).

The Council of the RPSGB is mainly concerned with the breadth of the course content in a pharmacy degree. The criteria used for accreditation incorporate general aims and objectives of provision of a course in addition to general topic guidelines for teaching.

The criteria indicate that the student acquires a sufficient understanding of the scientific principles and techniques of the pharmaceutical sciences, together with associated problem-solving skills, to become, after appropriate postgraduate experience in practice, a competent pharmacist. The Council considers that emphasis on the development of problem-solving skills must be incorporated into the syllabus and teaching methods of the degree course (19, 20). Whilst the course should continue to be strongly based on science, adequate time must be devoted to the teaching of topics relevant to the pharmacist's future professional role. The criteria does not consider or include a detailed course and teaching syllabus as a model for accreditation. It is felt that continuous developments in pharmacy and medicine should lead to constant revision of syllabus content. There will also be differences between schools on matters such as student contact hours and the balance between formal, didactic teaching and instruction by more participative methods. The topics taught should be regrouped to demonstrate relevance to each other and to pharmacy practice.

The Council acknowledges that the organisational structure of schools may well continue to evolve, through advancing expertise within the traditional subject headings: pharmaceutical chemistry, pharmaceuticals and pharmacology. The Council therefore wish to see evidence during accreditation of significant integration of teaching within the course across these traditional boundaries. The indicative syllabus it therefore recommends gives a broad indication of the scope of individual elements, which should not be taken to equate with the three traditional subject areas.

The three elements described are;

1. Chemistry of Drugs, of other constituents of Medicines and of Biological Systems.
2. Medicines Design and Manufacture; Materials, Methods and Quality Standards.
3. The Action and Uses of Drugs, Medicines and Other products.

The three elements should be given the same emphasis in the core curriculum of a three year course. The Council of the RPSGB do however provide some compulsory guidelines for the teaching of the non-scientific areas of the course i.e. pharmacy practice.

The accreditation guidelines offer elements of the pharmacy practice course which should be incorporated in the pharmacy degree;

1. A sound knowledge of pharmacy related legislation and codes of conduct and practice.
2. An awareness of the professional and social context in which pharmacy is practised.
3. Some knowledge and understanding of the social and behavioural sciences relevant to pharmacy practice and some mastery of communication skills.
4. An appreciation of the structure of the RPSGB, other professional bodies, the major branches of pharmacy and how they interrelate.
5. An understanding of the role of the pharmacist including;
 - traditional dispensing
 - patient related clinical pharmacy
 - pathology and therapeutics
 - response to symptoms
 - advisory role of the pharmacist
 - drug and patient information
 - computers in pharmacy

The accreditation guidelines stipulate that there must be a practical examination to assess competence in dispensing practice and a Pharmacy law examination in the degree course. The student must show competence and success in both these examinations for a pharmacy degree to be awarded to them. (19,20). The practice guidelines also include topics which must be taught under the core curriculum and topics which can be offered as options.

The Council of the RPSGB appoint persons to visit each school to discuss the curriculum and regulations with staff and students. After the visit, the course can be accredited for a further five-year or lesser period with or without recommendations, ask the school to resolve matters of concern or not accredit the degree course.

1.6.2 Overall objectives of pharmacy education in the UK

The following practice-based objectives are regarded by the RPSGB as necessary achievements by the pharmacy undergraduate course (19,20);

1. Understand how medicines are developed, manufactured and brought to the market place.
2. Have a basic understanding of the formulation of medicines and the capability to prepare extemporaneously any medicine for which this would be regarded as the normal means of provision.
3. Be able to interpret and fulfil prescriptions and other orders for medicines, in accordance with legislation and codes of professional conduct and practice.
4. Have sufficient academic knowledge to underpin a role in advising patients and other health care professionals about medicines and their usage, including knowledge of health-care systems and of how people behave in relation to health care.
5. Have an appreciation of the principles of quality and quality assurance mechanisms in all aspects of scientific and professional activities.
6. Have an appreciation of research methodologies relevant to natural, clinical and social science.
7. Be aware of the major sectors of practice of pharmacists and the main pharmaceutical organisations.

1.7 The pharmacy syllabus previous to 1997

An analysis of the pharmacy syllabus previous to 1997 shows the nature of topics taught at the schools of pharmacy are similar. Some of the subject areas have different titles in schools but a closer analysis shows it to be similar to a topic with a traditional title. The major subject areas covered are *Pharmaceutical Chemistry, Pharmaceutics, Pharmacology, Microbiology, Pharmacy Practice and Clinical Pharmacy* (21). The number of lecture and practical hours spent on each topic vary between the schools of pharmacy. The results in Table 1.1 show the total contact hours for each school and the proportion traditional lectures represent of this total. This information has been calculated based on the three year course for each school (four in Scotland) from the syllabus each school provided to the RPSGB in 1992 (21). The contact hours include final year projects where the student conducts research work under supervision.

Table 1.1: Specified contact hours and the proportion that lectures contribute to total contact hours for each school based on 1992 syllabi.

School of Pharmacy	Contact hours	% of lectures
Aberdeen	1887	44
Aston	1451	58
Bath	1403	47
Belfast	1408	42
Bradford	1569	40
Brighton	1726	51
Cardiff	1493	56
Glasgow*	1874	47
Leicester	1661	52
Liverpool**	1395	48
King's, London	1477	45
SOP, London	1655	40
Manchester***	1319/1259	50/54
Nottingham	1215	58
Portsmouth	1620	59
Sunderland	1623	46

* Course is modular and awards credits. Hours shown contribute to the maximum possible number of credits but project and clinical attachment not included

** Does not include module electives

*** Two options available in the final year contributing to different contact hours.

The analysis shows that most of the schools of pharmacy use the lecture format as an essential form of teaching. The second most common form of teaching was by practical laboratory classes.

1.7.1 Average content of each subject area in the pharmacy course

Using the 1992-93 pharmacy syllabus summaries and schedules, an average has been calculated for the contribution each major subject area makes to the pharmacy course (21). Figure 1.1 to 1.6 highlights the proportion of each core subject area in each school from the 1992-93 syllabus. This has been calculated from each school's total contact hours for the pharmacy course. Optional studies and projects have not been included in this calculation.

This calculation will only be a close approximation as there were several problems encountered;

- a) topics given unusual names like 'pharmacy in perspective' were difficult to identify as to the nature of their content.
- b) Some school syllabus combined for example, pharmaceuticals and dispensing or microbiology and pharmacology, which made it difficult to ascertain proportion of each.
- c) the content of microbiology at a few schools was difficult to identify, and was therefore not included. At these schools e.g. Bradford, Cardiff, King's London and Nottingham, the proportion of other scientific subject areas is considerably higher. It is assumed that microbiology was incorporated in these scientific subject areas.
- c) the basic chemistry, biology and physics taught in the first year of both Scottish schools were not included under the scientific subject areas.

Table 1.2 shows the average proportion each major core subject area contributed to UK schools based on their 1992-93 syllabus.

Table 1.2: Average proportion each major subject area contributes to all 1992-93 UK schools of pharmacy.

Subject Area	Average percentage (based on total contact hours)
Pharmaceutical Chemistry	22%; (12 schools between 19-24%)
Pharmaceutics	19%;(14 schools between 17-24%)
Physiology/Pharmacology	19%; (11 schools between 15-21%)
Microbiology	7%; (11 schools between 4-11%)
Pharmacy Practice	10%; (13 schools between 8 -14%)
Clinical Pharmacy	5%; (13 schools between 4-8%)

Table 1.2 and Figures 1.1 to 1.6 show that most schools had very similar proportions of contact hours for three of the major scientific areas, Pharmaceutical Chemistry, Pharmaceutics and Microbiology. The only schools which showed a considerable variation in proportion of these subjects were where it was either difficult to identify Microbiology as a separate identity or where subject areas had been given terms difficult to identify. Considering the low proportion of Pharmacy Practice and Clinical Pharmacy in each school, there was some variation in these subject areas from school to school. However, there is a need to re-emphasise that these proportions will be an approximation due to some of the problems encountered which have been discussed.

Figure 1.1: Proportion of Pharmaceutical Chemistry in each school's 1992-93 syllabus

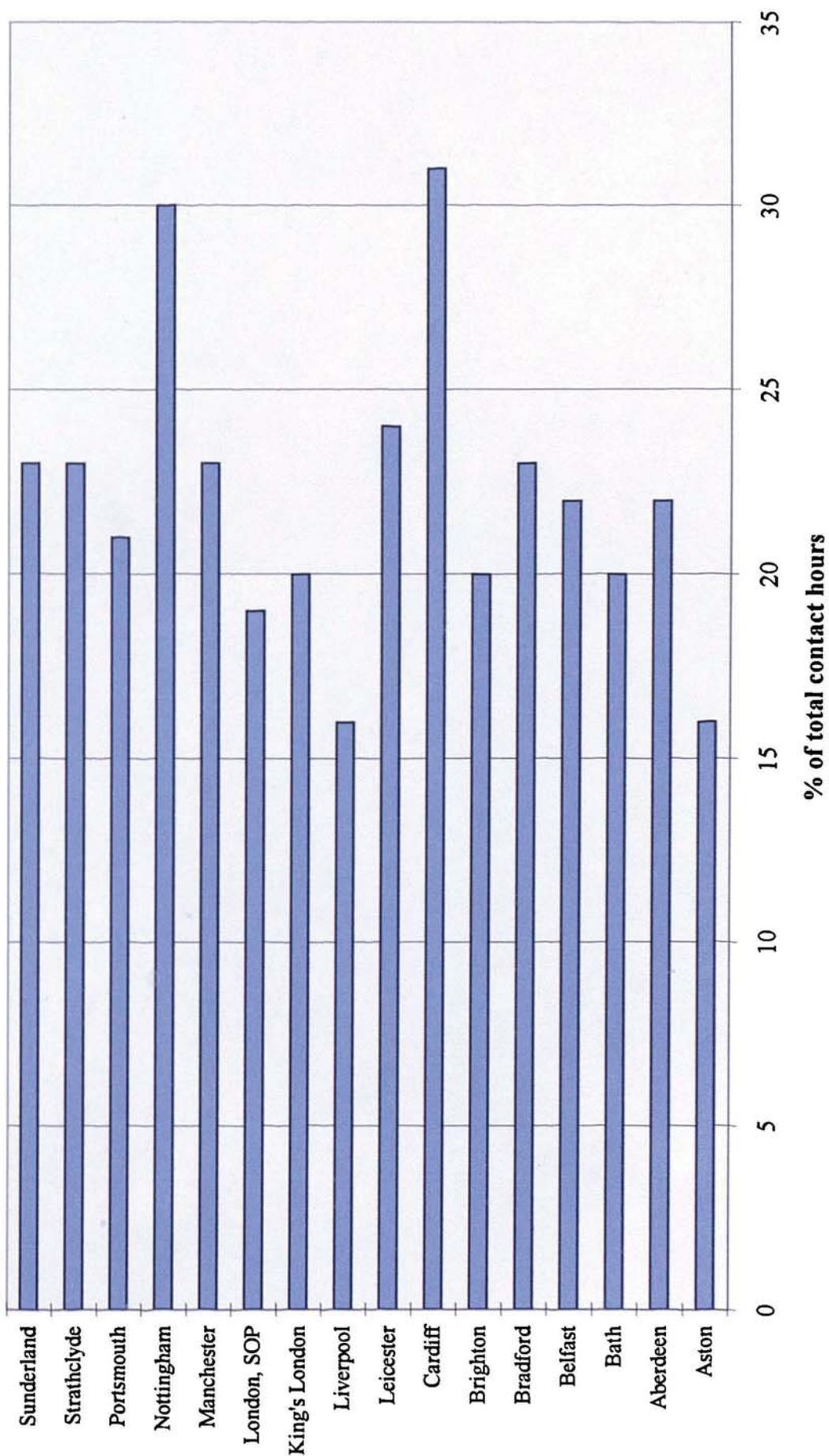


Figure 1.2: Proportion of Pharmaceutics in each school's 1992-93 syllabus

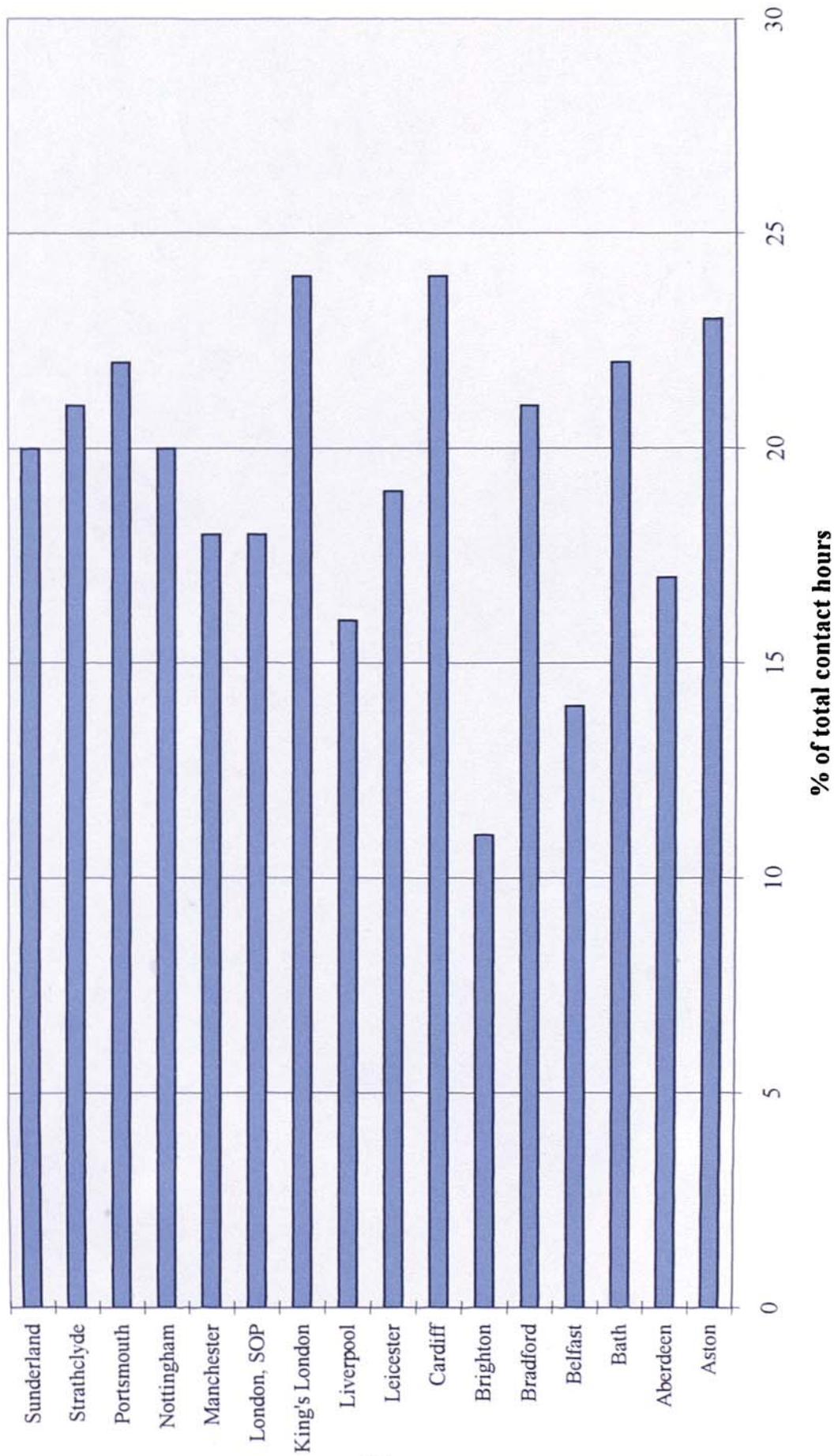


Figure 1.3: Proportion of Physiology and Pharmacology in each school's 1992-93 syllabus

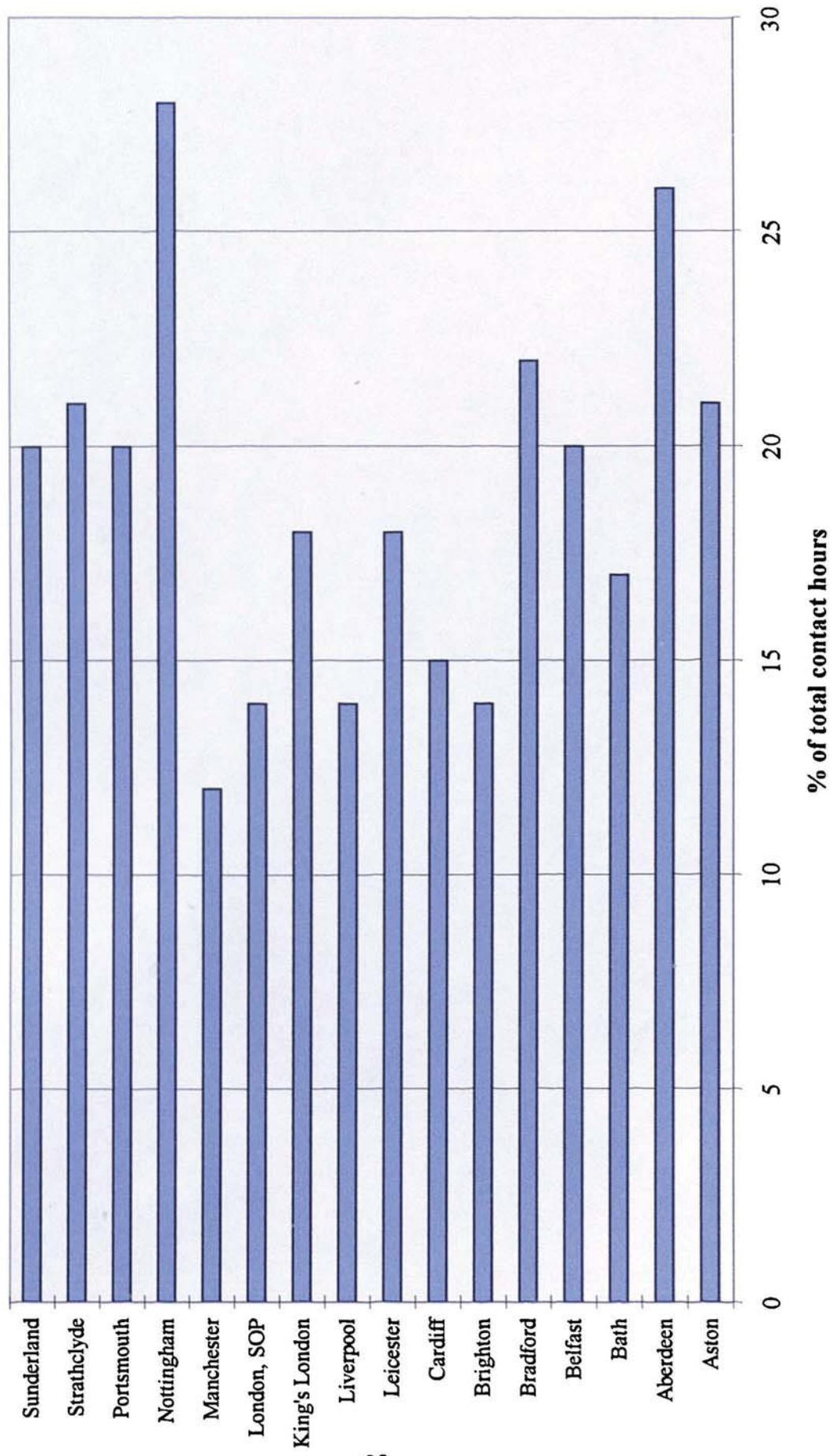


Figure 1.4: Proportion of Microbiology in each school's 1992-93 syllabus

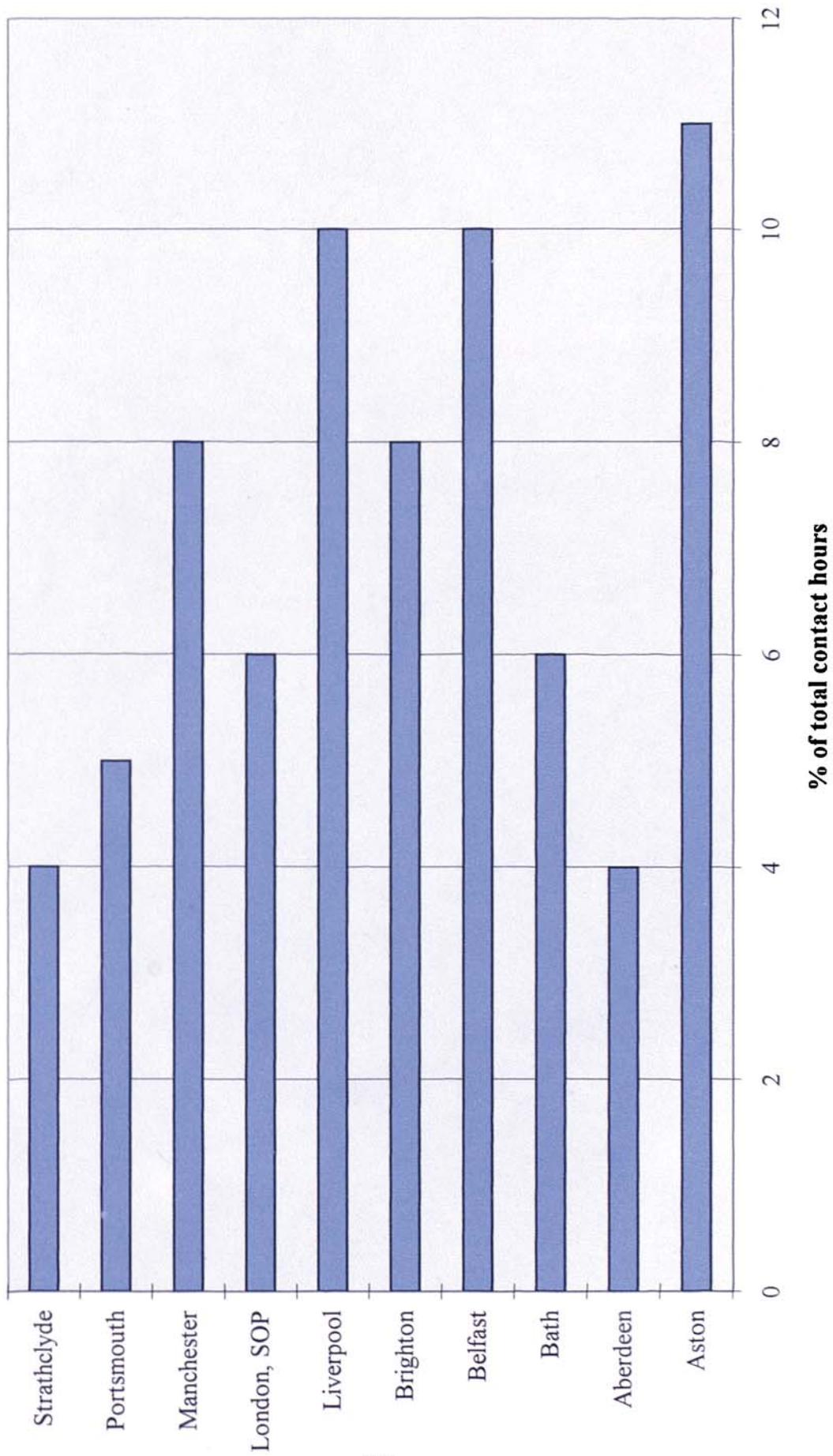


Figure 1.5: Proportion of Pharmacy Practice (including social and behavioural pharmacy) in each school's 1992-93 syllabus

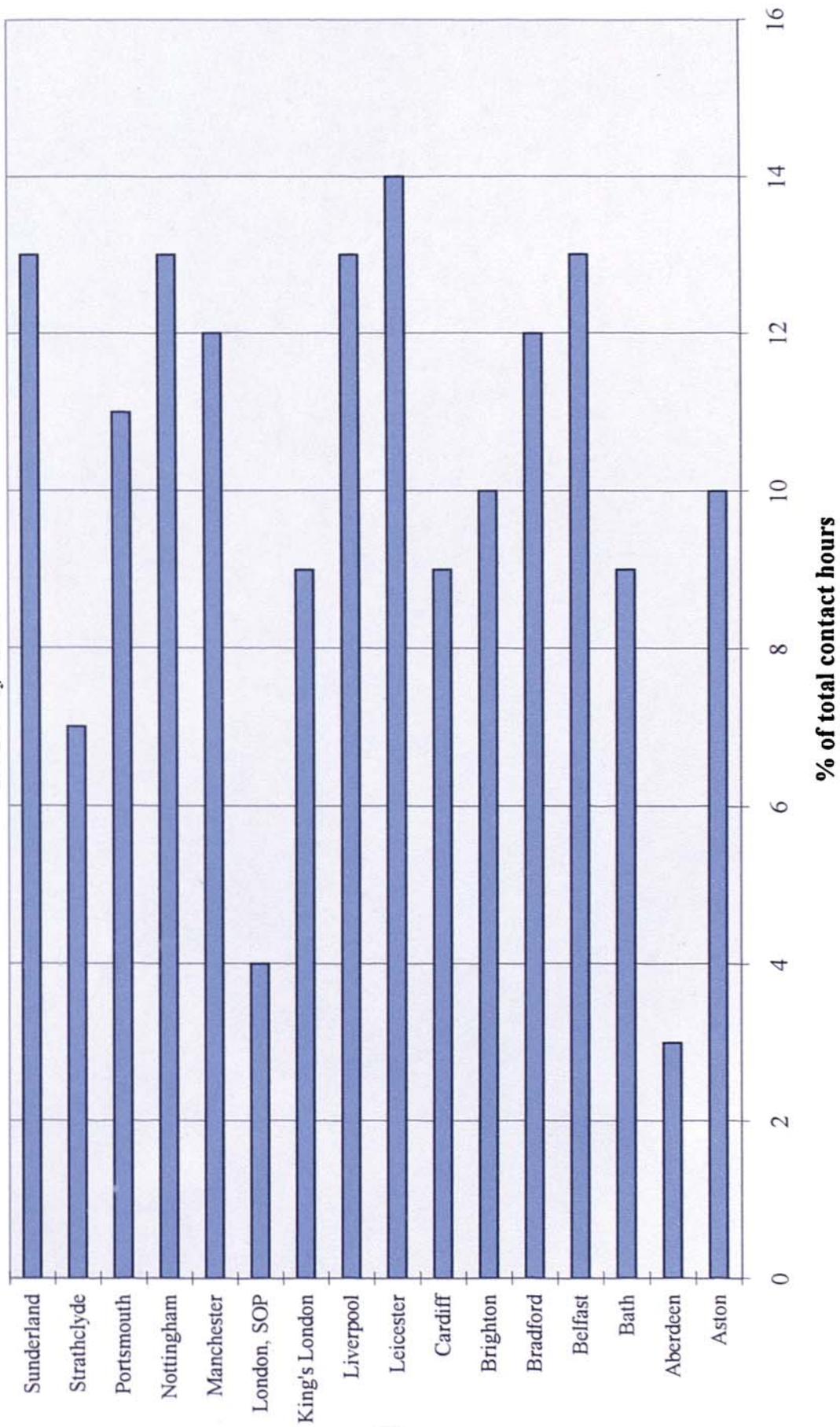
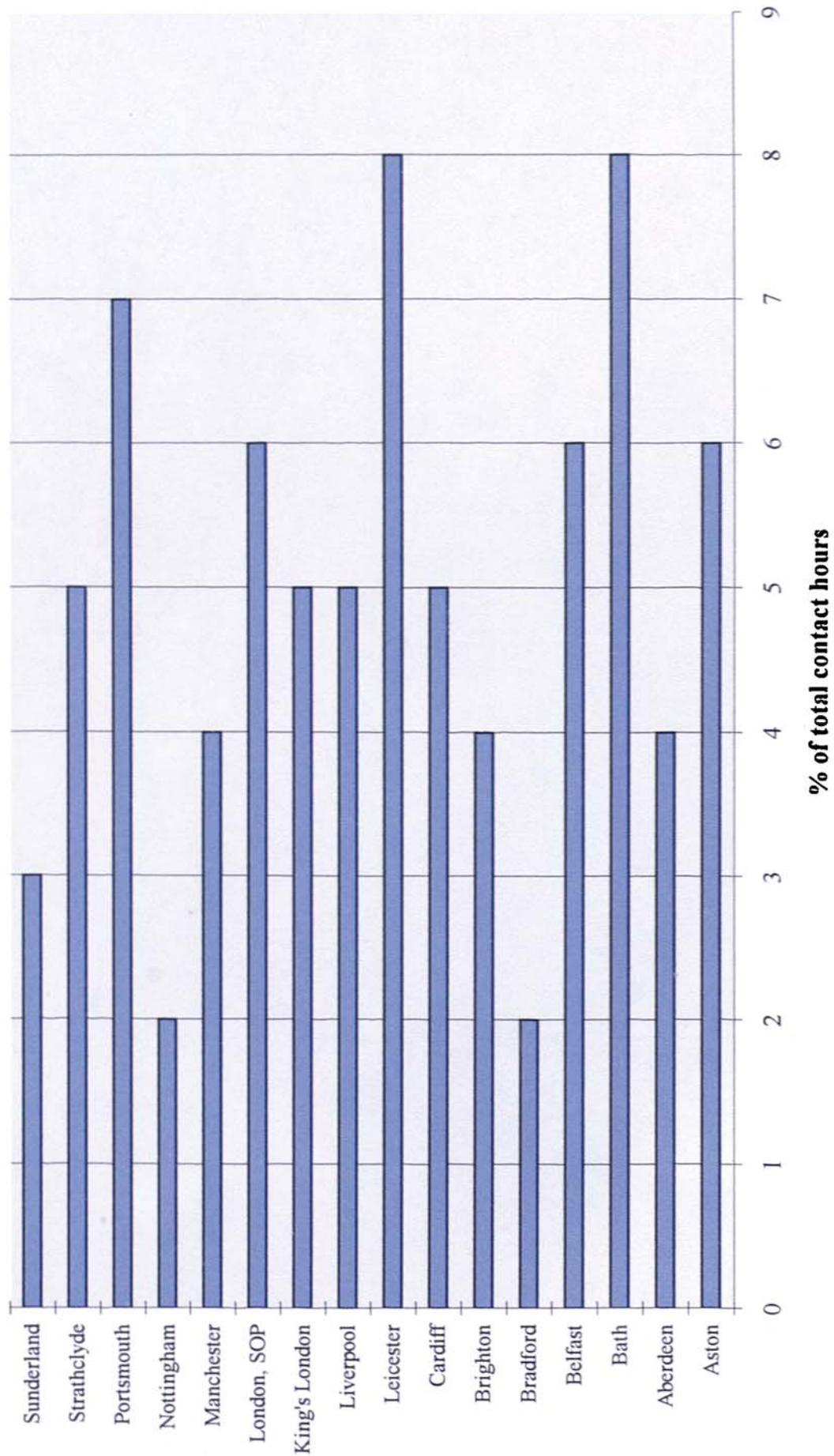


Figure 1.6: Proportion of Clinical Pharmacy in each school's 1992-93 syllabus



1.7.2 Assessment of subjects in the schools of pharmacy

All the schools have strict guidelines in place for the assessment of students. In most cases, the first year assessments are qualifying examinations which do not contribute to the overall degree percentage but require the student to achieve a minimum satisfactory standard. The assessments in the second year usually contribute towards the degree. Again, most of the schools specify a minimum satisfactory standard in any practical assessment. The schools that had introduced modularisation in 1993 specified assessments for each module or attached credits to each module and an annual minimum number of credits a student was expected to attain. The student must achieve satisfactory standards in dispensing practice and pharmacy law which is dictated in each syllabus. The bulk of the assessment contributing to the degree rests on the final year in the form of projects and final year examination papers (21).

1.8 The pharmacy student

The entrance requirements for pharmacy are higher than most non-vocational courses, which is to be expected of a course which prepares students for a highly challenging and demanding vocational career. In Scotland, most students undergo H-level education before entering university. The H-level system covers a broader range of subjects than the A-levels and does not specialise the student to the same extent in two or three science subjects. The entrance requirements for pharmacy vary around the world but the general principles of a good scientific background are the same. The demand for places in the UK schools exceeds the supply generally (16). The schools are therefore in a fortunate position of being able to fill their student places relatively easy and even exceed desired numbers. The RPSGB has always emphasised to schools for the need to balance pharmacy student numbers with the market demand for pharmacists. In 1992, the Council carried out an urgent review of its approval of the pharmacy degree course at Sunderland because concern had been raised that there had been a 50 per cent increase in student intake (22). The Council decided after extensive debate that the Sunderland course would be approved, subject to certain conditions relating to physical resources, staffing and future intake levels (23).

Following this, a meeting of Society representatives and heads of schools of pharmacy was arranged where agreement was reached to moderate pharmacy school intake numbers against the demand for new pharmacists. An examination of an analysis of pharmacy students had shown that the number of pharmacists were increasing steadily but there was evidence at the time that fewer jobs were being advertised, graduates were having difficulty obtaining pre-registration places and new registrants were not easily finding work within the profession (24). However, an analysis of student numbers since 1992 shows that universities have not kept their agreement to moderate pharmacy student numbers. Applications to study pharmacy in 1993 were substantially higher than 1992 with an increase of 12% to universities and 3% to former polytechnics (25). In 1994, schools appeared to moderate their intake but since then the numbers have increased. The recent increase of students coincides with the reported manpower shortage of pharmacists.

Table 1.3: Analysis of numbers of students entering to study pharmacy since 1993 (26).

Year of intake	Number of students
1993	1,544
1994	1,538
1995	1,618
1996	1,743

The majority of students now studying pharmacy are female, up to 75% females at some schools (26). The increasing demand from students wishing to study pharmacy means that schools are able to set a high entry standard. Selection is usually on the basis of the A-level results (Highers in Scotland) and may be supplemented by an interview at a school. In addition, A or H-level chemistry is a compulsory pre-requisite for school students entering pharmacy.

An analysis of the average grade entry for each school of pharmacy (except Scotland) based on points awarded for A-level grades is shown in Table 1.4. The averages were calculated from the 1996 intake of pharmacy students to each school (26).

The points awarded are on the basis of; A=10 B=8 C=6 D=4 E=2

Table 1.4: The average A-level entry points for each pharmacy school's student intake in 1996 (except Scotland).

School of pharmacy	Average entry points for 1996
Nottingham	28
Belfast	27
Bath	25
Cardiff	25
Aston	24
School of Pharmacy, London	24
Manchester	24
King's, London	23.5
Bradford	22
Brighton	22
Liverpool	22
Sunderland	21
Portsmouth	20
Leicester	19.5

The points intake in the Scottish schools shows that both schools mainly attract students with an average of 10 points in the best four H-level examinations. This corresponds to 2-A + 2-B grades of entry and is quite similar to the high standard requirements in the other UK countries. The lower average points of entry are represented by the former polytechnics. The general intake of pharmacy students at most of the other 'traditional' universities corresponds to a 3-B or 2-B + 1-C grade entry. The Nuffield report suggested that pharmacy students need not solely emerge from traditional A or A/S level system but schools should also consider interested and high calibre students from BTEC courses, dispensing technicians and well-qualified graduates who studied other courses for entry to the pharmacy course (16).

There is increasing evidence that selection of students to medical education solely based on prior A-level academic success will not produce the 'best doctors' (27). The need for radical revision of the A-level system has been a common theme of many recent studies. The 1988 Higginson Report 'Advancing A-levels', proposed that students take five rather than three A-levels which was rejected by the Government (5). The Royal Society report in 1991 'Beyond GCSE' put forward proposals for the reform of post-16 education. Some of the objectives of the report were to increase flexibility and breadth within the school curriculum (28). These proposals were not accepted by Government.

The Government outlined its own proposals for the reform of post-16 education in the White Paper 'Education and Training for the 21st Century' in which it outlined the retention of the A and AS examinations, the extension of the NVQ framework and the development of less vocational specific vocational qualifications (29). The 1997 'Dearing Report', provides a framework to enable students to progress through higher levels of education using both vocational and academic qualifications (1).

It is clear that the educational system in Britain will continue to encourage individuals with diverse educational backgrounds to pursue higher education. It is also clear that the trend towards newer and broader post-16 qualifications rather than specialised A-level education will allow young people to enter higher education including pharmacy. In fact, the traditional A-level system may well be radically changed if the 'Dearing Report' recommendation on offering pupils the option of an Advanced Diploma which combines studies in depth with complementary breadth is implemented (1). In 1995, there were over 200 home students who entered pharmacy with previous study in other undergraduate degrees, BTEC's, HND's, HNC's, Access courses, foundation courses, postgraduate degrees and transfers from other university science courses (26).

There is evidence to suggest that all the pharmacy schools apply stringent quality control procedures through the course and entry to a pharmacy course does not guarantee a degree after. The number of students who fail to achieve satisfactory standards is high and many of these students may have to terminate their pharmacy study. In 1996, a total of 1,102 students from all the schools in England (except Bradford), Wales and N. Ireland graduated with a three-year course pharmacy degree but in 1993 (the year this cohort started pharmacy study), there were a total of 1,259 student admitted for pharmacy study in these schools. This represents an attrition rate of approximately 12% (26).

1.9 The pharmacy syllabus countries outside the UK

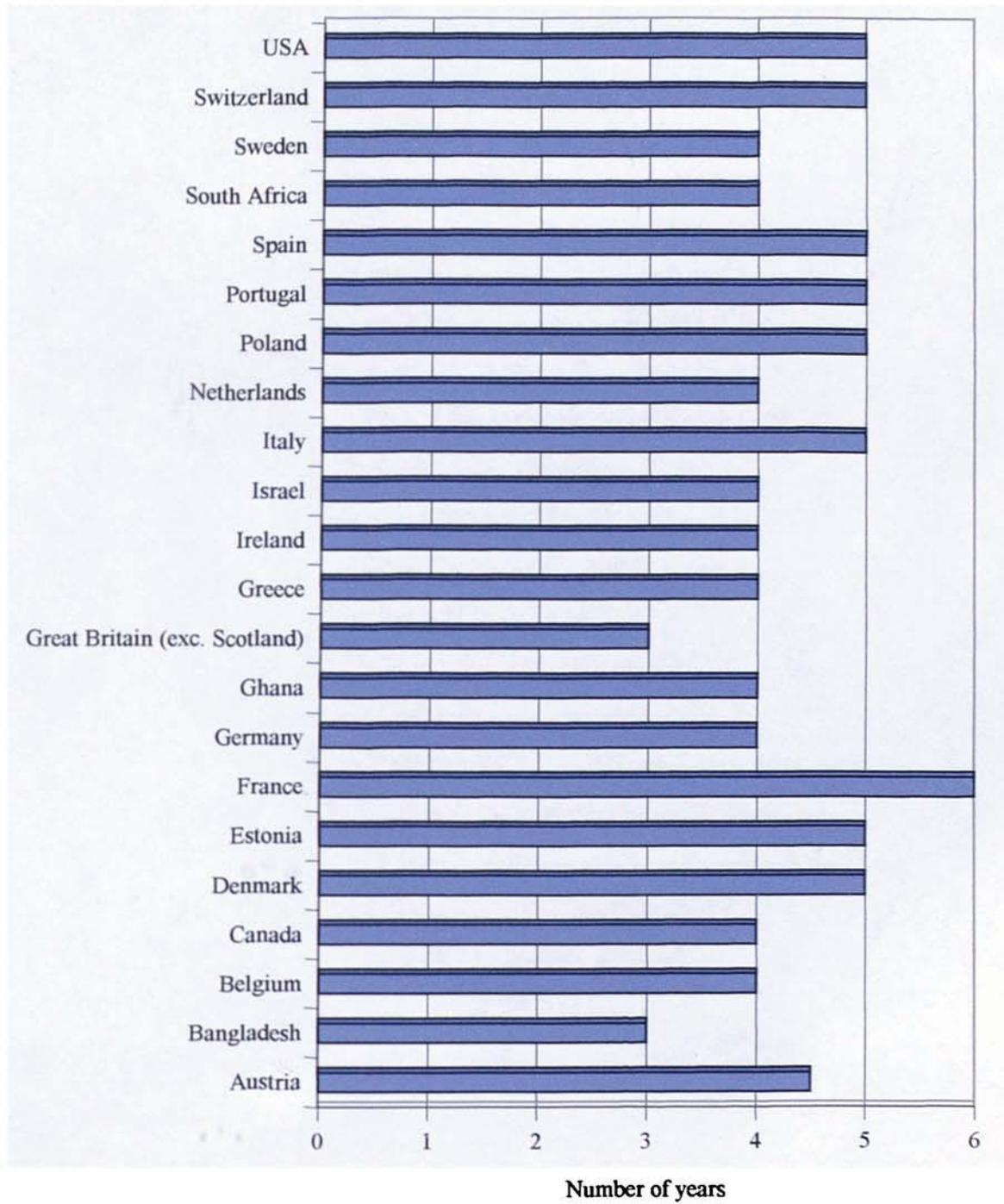
The pharmacy courses vary considerably around the world. Some of the pharmacy courses in European countries are organised, examined and controlled by the respective pharmaceutical society. In these countries, the respective pharmaceutical society may specify subject areas and teaching periods and the school may not have any latitude in the provision of the course. In Germany, for example, the course has very rigid subject and subject-time scheduling and there is very little variation from one school of pharmacy to another. The length of courses varies as well and the early part of a pharmacy course may teach basic sciences which are covered by UK A-level or Higher level systems. The pharmacy course in France and the USA incorporates practice-based training or externship within the educational framework. The pharmacy course in Australia and New Zealand is perhaps the most similar to the one in the UK.

Figure 1.7 shows the duration of undergraduate pharmacy education on an International scale i.e. data obtained schools of pharmacy from 22 countries around the world, which offered a degree in Pharmacy in 1993 (30). The duration includes any pre-registration training or clerkship during the course i.e. which is part of the graduate degree or programme. The duration does not include any pre-registration training after graduation. The majority of pharmacy courses around the world are four years or longer in length. However, most of the countries where the course exceeded four years, training or clerkship was included in the graduate degree program.

1.9.1 U.S.A

In the USA, the American Council on Pharmaceutical Education (ACPE) accredits professional pharmacy education. This serves as a voluntary and governmental means of quality assessment and enhancement of academic pharmacy programs. The college or university receives authorisations from a state to operate but the ACPE accredits standards and guidelines of the pharmacy course itself. In addition to on-site visits, the accreditation process assists schools to look after their objectives and serves to ensure students that the program meets specific standards. It also serves to assure the government for financial and grant allocation purposes, that the school is capable of managing public funds in a responsible manner (31).

Figure 1.7: Duration of pharmacy course in countries around the world in 1993



There have been four major occasions where pharmacy has examined, analysed and offered recommendations regarding pharmaceutical education in the USA. The 1923-27 curriculum study provided the stimulus for sweeping changes in pharmaceutical education. The pharmaceutical survey of 1946-49 has been called the most substantial single study ever made of a nation's pharmaceutical profession in relation to its supporting educational system. The study commission on pharmacy 1973-75 laid out a broad and fundamental philosophical framework within which the profession attempted to establish policies regarding pharmaceutical education.

The most recent was a Task Force set up by the American Pharmaceutical Association to review and analyse pharmacy education for the 21st century.

The Task Force suggested 12 basic curriculum characteristics. Some of these were (32);

1. Provide instruction in the physical, biological, chemical, behavioural, and administrative sciences that are the basis of modern pharmaceutical practice.
2. Foster the development of communicative and inter-personal skills necessary for communication with health professionals and lay persons.
3. Provide students with instruction regarding the selection, initiation, maintenance and termination of drug therapy for common medical conditions.
- 4 Provide the student with adequate opportunity to develop problem-learning skills.

There are 75 schools of pharmacy in the USA in which the student participate in either a 5 (BS) or 6-year (Pharm D) curriculum before graduating. In the five-year curriculum, the first two years are grouped as the pre-pharmacy stage which includes a period of internship or working experience. Internship is described as any experience in a supervised pharmacy practice program. The normal recommendation is that between 1000 and 2000, normally 1500, hours of paid work is required, although there is no formal assessment for this work period. The internship is usually completed over the summer vacations and is organised by the student. The first year of the course consists of compulsory subjects which include classic physical, chemical and biological sciences and mathematics. The second and third years covers biomedical and pharmaceutical sciences, microbiology and pharmacy practice. The next three years includes a period of a 6-month clerkship. The fourth and fifth year in the USA course, concentrates heavily on topics such as pharmacotherapeutics, biopharmaceutics, pharmacy law and administration and clinical pharmacy.

During the fifth year, the student must take a clerkship program where they spend a 4-4 week rotation working in areas of community, hospital and clinical pharmacy. In addition, they take an elective of their choice. The elective allows the student to specialise in a specific area, usually related to a branch of pharmacy. The choice of electives will mainly govern the branch the student wishes to work in the future. The clerkship is organised by the school of pharmacy and assessed by school staff. The places are required to meet minimum standards outlined by a pharmaceutical authority. There is an examination after the clerkship, the results counting towards the final degree. The main objective of the course is that the student is well prepared for community or clinical and hospital pharmacy (30).

Since the 1960's pharmaceutical education in the USA has been driven by a set of internal forces, the most dynamic being the clinical pharmacy movement. In 1987, Hepler indicated that the third wave, after science and practice, in American pharmaceutical education involved the clinical movement. This movement would involve a change in emphasis of curricula from the physical and chemical sciences towards the biological and clinical sciences (33). A 1990 survey of school curricula confirmed this by finding that the advent of the clinical practice of pharmacy had led to major changes in USA schools where curricula taught for many years has been deleted to be replaced by more clinically orientated education (34). Similarly, the teaching of social and behavioural pharmacy was given prominence over 20 years ago in the USA. At the time there was no definition of what exactly needed to be taught and most schools did not have trained staff to teach this aspect. Over the years, as it has become clear in the USA that pharmacy has a clear societal mandate to counsel and understand the behaviour of patients and drug use, this area has become more developed in the curriculum (35). Nowadays, social and behavioural pharmacy builds on theory and techniques from sociology and psychology, and is focused on the psychosocial aspects of drug therapy and pharmaceutical care, communication with patients and other health professionals, professional education and clinical decision-making, and the drug use process (36).

The emergence of clinical and social and behavioural pharmacy was recognised and proposals to extend the USA course to six years emerged as the five-year curriculum could not accommodate all these areas including clerkship experience for students. The six-year course offers the Pharm D qualification and provides a very high level of clinical knowledge to the student. Today the Pharm D degree is offered as the first professional degree by many schools (37).

A survey in 1994 found that of the 75 US colleges/schools of pharmacy, fifteen offered Pharm D degrees as the sole professional degree, 42 had decided to do the same and 7 were currently deciding (38).

1.9.2 Denmark (39)

Denmark has only one school of pharmacy, the Royal Danish School of Pharmacy in Copenhagen. The curriculum follows a five year course which leads to a Master of Science (MSc) and requires a qualification in natural science as an entrance level. Each academic year is split into two terms. The first three years are mainly devoted to the chemical and biological sciences. After completing and passing all required examinations, the student obtains a Bachelor of Science (BSc). The pharmaceutical sciences including Social Pharmacy are taught during the third and beginning of the fourth year. This is followed by a period of a 6-month practical experience (internship) at a community pharmacy, with a study programme closely supervised by the school. Up to this point all subjects are part of the core course and therefore compulsory. The first term of the fifth year consists of a research project with a written thesis. Furthermore, the students select a number of alternative disciplines according to their specialisation interests. The specialisation usually focuses on future interest in a branch of pharmacy.

At the end of this year, the student receives the Masters degree which gives the student the licence to practice in any pharmacy in Denmark with full professional responsibility. The Danish pharmaceutical studies differ from the UK as there is a much greater emphasis on the teaching of socially-oriented subjects.

The proportion of time spent on subject areas is as follows;

Chemical subjects	30%	Biological subjects	20%
Pharmaceutics	10%	Thesis research	10%
Internship	10%	Social and alternative subjects	20%

1.9.3 Netherlands (40, 41)

There are two schools of pharmacy in Groningen and Utrecht. The schools are subject to a five-year external peer review. Both universities have an initial four year curriculum which is termed phase one. Each academic year is 42 weeks in length and there are approximately 40 study hours each week. At the end of the four years, the student obtains a Masters degree and can then proceed to phase two which is a two-year professional pharmacy component. After phase two, the student qualifies as a pharmacist and can practice in any pharmacy. Over 70% of student choose to enter this second phase, while a further 10% proceed to do a PhD study. The students who do not enter phase two can do so at a later stage but at a considerable personal financial expense.

The courses at both schools are essentially similar, the minor differences arise in the organisation and order of topics in the first four years. The first three years constitute the core course and includes subject areas from the biomedical sciences, chemistry and mathematics. The student are required to pass the first-year examinations. The fourth year gives an opportunity to specialise in a wide range of science-oriented subject areas. A period of one year is allowed for specialisation. At Utrecht, this period is divided into a six-month research project and a thesis. At Groningen, there is more time allocated for specialisation but of this, a minimum of five months of research in a chosen subject is compulsory.

The proportion of time spent on subject areas in phase one is;

Chemistry and pharmaceutical analysis	40%	Biomedical sciences	35%
Biopharmacy and pharmaceutical technology	15%	Other subjects	10%

After completion of phase one the student can enter the work market as a science graduate. The second phase introduces subject areas related to the treatment of the patient with drugs, extemporaneous manufacturing mainly directed to the knowledge and skills required to practice the profession. The second phase concludes with a six-month training period, part of which is spent in a community pharmacy and part in a hospital pharmacy under supervision. The quality of education is monitored in different ways. The course is regularly evaluated by surveying recent students and the results collected and studied by official evaluation committees. Further formal surveys are also conducted amongst pharmacists of differing years of practice about the relevance and quality of the course.

1.9.4 France (42, 43)

France has 24 institutions that provide pharmacy education through a general six-year program. The system is regulated by the Ministry of Education and the Ministry of Health; the government controls the number of students who graduate from any college of pharmacy. Students have to complete a rigorous curriculum taking either six or nine years. Both cycles have three levels. The first and second levels consist of a total of four years of theoretical instruction; the third level is practical and its duration varies. The first level comprises two years of education in the basic sciences including chemistry, biology, statistics and anatomy. At the end of the first year all students must pass an examination in order to advance to the second year. Approximately 20,000 students enter the first year of the course but only about 2,000 are successful in the first-year examination and continue studying the pharmacy degree. The second level consists of two years of instruction, but the focus shifts to pharmaceutical and biological sciences. At the beginning of the third year, students must choose the practice setting they want to work in when they graduate. Students who want to work in hospital are given two opportunities to pass a qualifying examination given once a year. They can take the exam during their fourth, fifth or rarely, sixth year. Those who fail both times must choose from the other two branches. Industrial and community students do not have to take a qualifying examination. Completion of the first and second level signifies the end of four years of theoretical instruction and the beginning of the third level. The third level primarily involves training in practice settings, but some course work is mandatory. The short cycles produces community and industrial pharmacists, the long produces clinical pharmacists, researchers and academics. The fifth year familiarises students with health care professionals and practices and with real patients and diseases. During this year students complete two stages of clinical practice, a third in a laboratory and fourth stage in a pharmacy.

After the fifth year, students advance to a residency-type work-study program specific to their chosen career. Once the students finish these clerkships, they have to write a thesis about their experience. The hospital pharmacy internship lasts four years and after the thesis, the student is awarded the Pharm D degree. In France, 74% practice in community, 6.5% in hospital and 4% in industry.

1.9.5 Germany (44)

The system of pharmaceutical education is in some ways similar to the structure of the four-year course in the UK. There are 23 schools of pharmacy in Germany and the academic year is 38 weeks long. The selected student usually have very good academic ability in their 'Abitur' examinations, similar to the A-level system. The German Pharmaceutical Association dictate the course structure which includes the compulsion of attendance of all classes, maximum number of contact hours of the course and a strictly followed guideline for the practical element of the course. The schools are allowed some, but little, variation in the teaching of subject areas. The course is four years long teaching subject areas similar to that in the UK. These include the pharmaceutical sciences, legislation and pharmacy practice. The students then pursue a year of pre-registration training of which six months must be spent in a community pharmacy. During this year, there is a compulsory attendance of 120 hours of professional seminars related to practice, followed by an end-of year examination before the student can practice as a pharmacist. The training year is supervised and has to meet standards set out by the Society.

1.9.6 Australia (45)

The pharmacy course in Australia is in many ways similar to that of the three-year course in the UK. The RPSGB and Pharmaceutical Society of Australia share easier reciprocation agreements allowing pharmacists to work in either country after minimum supervised training. In Australia, each State body dictates their own reciprocity agreements with the RPSGB but in general, are fairly lenient. There is no national uniformity of courses, but they are fairly similar in each of the six States. The Pharmaceutical Society of Australia are not involved in syllabus accreditation and do not provide national guidelines. The course comprises of a grounding in the basic sciences, followed by the fundamental pharmaceutical sciences and an increasing pharmacy practice content and focus. There follows a year of pre-registration training which is again becoming increasingly structured through projects, assignments and graduate training courses. There has been a well-organised movement over the years to press for the extension of the course to four years which has recently been achieved.

1.9.7 Overview

The pharmacy courses from other countries have many similar themes. The fundamental pharmaceutical sciences are taught in all courses but with some variation in the time allocated to them. This depends on the schooling systems in these countries and the extent the student has been taught higher level science while at school.

The primary differences observed between some of these courses and the UK are;

- a) In some countries e.g. USA, there is a compulsion to work during vacation periods as part of the course.
- b) Some of the countries incorporate a form of work training (clerkship) during the course.
- c) There is a greater emphasis on teaching of clinical, cultural or liberal topics in courses in the USA.
- d) In the USA and Netherlands, there are formal channels to evaluate the opinions of students about the pharmacy course they study. In the USA, the students provide this through conferences and the American Journal of Pharmaceutical Education. In the Netherlands, both students and pharmacists are officially and regularly surveyed for opinion on the quality and relevance of the course by respective schools.
- e) In Germany, mandatory attendance of continuing education seminars is imposed during pre-registration training.
- f) In the USA, Denmark and other Scandinavian countries, there is a greater emphasis on the teaching of Social pharmacy in the curriculum and this subject contributes a substantial proportion of the overall course.
- g) In most countries considered here, there are formal, detailed medium to long-term periods of specialisation for the student which relate to a branch of pharmacy of future work. The student is expected to make this choice of branch during their education.

1.10 The philosophy for the need to change

A former Secretary of the Scottish Department of the RPSGB, Dr. Chilton, said in the Todd Memorial lecture in 1988 'change, whatever form it may take, is inevitable and if pharmacy is to survive, its practitioners must be able to respond to it promptly and effectively. A pharmacist must be able to practice safely immediately upon qualification, we have failed if this is all we have taught him' (46). A similar view was presented by Godfrey at the 92nd Annual Meeting of the American Association of Clinical Pharmacy in 1991. In the presentation, Godfrey stated that pharmacy education must be prepared to change because pharmacy is significantly and rapidly changing, and will continue to do so. He further stated that a pharmacy course could not continue to deliver the same messages it did twenty years ago because the very nature of the pharmacist's role and their service to the public had changed tremendously (47).

At a presentation to the International Conference on Lifelong Learning in Pharmacy in Copenhagen (1990), Manasse, addressed the consideration required for a philosophy of pharmacy education for the future. He stated that the very nature of the pharmacy profession had changed over the years, but in many ways accompanying developments in education and the profession's quest for clarity of purpose, mission and identity were in a relatively immature stage. In Manasse's view, pharmaceutical education should inculcate students with the values necessary to serve society as caring, ethical, learning professionals and enlightened citizens and should provide students with scientific fundamentals and foster attitudes necessary to adapt their careers to changes in health care over a lifetime. He felt that pharmaceutical education needed to maintain a dynamic, challenging and comprehensive curriculum and develop communicative, inter-personal and problem-solving skills and raise awareness of the provision of pharmaceutical care in a variety of practice settings. Manasse concluded by indicating that the pharmacy curriculum needed a substantive review and over-hauling to more appropriately blend the needs of society with the required development of the professional we call the pharmacist (48).

Like pharmacy, there has been considerable debate about the problems facing medical education around the world, including the UK. Parsell *et al* reported that the way in which traditional curricula for medical education had been organised and taught as independent blocks of factual knowledge had contributed to curriculum overload in the UK and much of the information had been irrelevant to the rest of the medical course or to students' future careers.

In addition, when clinical practice was introduced students were expected to make conceptual links between specialised scientific knowledge and its relationship with human disease processes in an unplanned and unstructured way. Students therefore memorised facts and become passive learners to satisfy an examination-driven system (49). This has long been recognised as an ineffective way of learning that forces students to use ‘surface’ learning techniques that train the memory but not the mind (50).

In 1992, the General Medical Council made a recommendation for degree courses in medicine to introduce a substantial component of problem-based learning and introduce early clinical contact for medical students. The GMC felt that this would make medical education more relevant to the changing nature of health care provision (51). The world summit on medical education in 1994 also acknowledged that public health issues and social problems such as maternal and child health, AIDS and alcohol and substance abuse were presenting major challenges for healthcare and for medical education (52).

Since then, according to Parsell *et al*, the need to redefine medical education has been fully recognised and accepted by medical schools and, educational principles on which curricula should be based have been put forward and introduced. The experience of innovative medical schools around the world, the emergence of innovative learning methods and the implications of health-care reforms in Britain have also been major changes influencing change in UK medical education (49). The use of problem-based learning and early and relevant clinical education have been the major changes in UK medical education. The use of problem-based learning in medical schools around the world has been discussed later.

Many of the previous concerns expressed about medical education echo those of pharmaceutical education in the UK. Similarly, some of these recent changes in medical education could lead the way for changes in pharmaceutical education. The introduction of an extended four-year course provides an ideal opportunity to re-appraise provision of pharmacy education and make change where necessary. It is therefore necessary to look at the historical development of the four-year course, the groups that have been involved in making the policies for the four-year curriculum and the actual changes, amendments and additions suggested by the RPSGB for the new course.

1.11 The four-year pharmacy course

The process towards implementation of an extended course began in 1989 following consideration by the Society's Education Committee of the Committee of Vice-chancellors and Principals and the Standing Conference on University Entrance joint review of universities' degree courses and of entrance policies in response to secondary curriculum change and wider access. The Education Committee decided to canvas the views of UK Committee of Heads of Schools as to the desirability of making a formal case for extension of the pharmacy degree course. Over many months and from important sources, the argument for a four-year pharmacy degree course throughout the UK were marshalled in a 'case' document prepared by the education division in consultation with two nominees of the UK Committee of Heads of Schools of Pharmacy and the Chairman of the Education committee. Before and since this case document has formed the focus of correspondence with ministers, discussion with officials of the DOH and HEFCE (53).

In presenting the second Chelsea alumni lecture in March 1991, Professor Noyce of Manchester University said that the pharmacy profession should be both ambitious and decisive in its approach to extending the undergraduate pharmacy course, particularly since the RPSGB was committed to securing a four-year course (54). At the 150th Annual General meeting of pharmacists in May 1991, the President of the RPSGB officially announced it was to seek an extension of the pharmacy course in England and Wales to bring it in line with the rest of the European Community.

There were two main reasons for change announced. Firstly, it was the Government's intention to widen access to tertiary education which would enrich the profession by those who entered schools of pharmacy with non-standard entry qualifications. Secondly, there had been a wide recognition of the need to incorporate within pharmacy degree courses a significant element of tuition in the social and behavioural studies without damaging the essential science base of the programme. It was also announced that the proposal was likely to be successful as an extension was also necessary for EC harmonisation and had the approval of heads of schools of pharmacy (55). The proposal for extension was also supported by the pharmacy student body, the BPSA in April 1992. A unanimous decision was made by the BPSA that supported the extension of the course but with study in the area of pharmacy practice making up a significant part of each year of the extended degree (56).

In August 1992, the prepared 'case' document was given to the HEFCE giving four reasons why the pharmacy degree course should be extended to four years. This document was published in the PJ a month later (57). The four reasons were;

1. Changes to the secondary education curriculum that have reduced the breadth of its science content.
2. The need to address advances in the biological and chemical sciences in sufficient depth for understanding of new and future approaches to drug therapy.
3. The need to incorporate a useful grounding in social and behavioural sciences relevant to pharmacy practice and meeting the needs of patients and other health care professionals.
4. The implications of these developments in relation to the European Community directive on pharmacists' education and training.

In November 1994, the Director of Policy of the HEFCE said that it was entirely for the Society to decide on criteria for accreditation and that the HEFCE would raise no objection to any statement of intent by the Society's Council to require, by a declared date, all UK pharmacy degree courses to include a minimum of four academic years. This led to the establishment of a small working group of the UK Heads of Schools comprising of five heads to explore main issues in the process of moving to a four-year degree course (53). In April 1995, the Council of the RPSGB formally announced that the pharmacy degree course would be of a four-year duration from 1997. The Council approved the view of the heads of schools that new or enhanced content would be added throughout existing programmes and that most of the new material would be scientific subject matter (58).

The decision to approve an even greater content of scientific subject matter immediately raised many concerns. The first concern mentioned at the same time as the Council's decision was from the Editor of the PJ. The editorial comment stated that it was disconcerting to note that the schools seemed intent on using the extra year predominantly for natural science matter. The comment appreciated that the schools wanted to maintain their status within the academic community but stressed that the schools should remember that the vast majority of graduates would go on to become practising pharmacists. It concluded by stating that it was not enough for schools to say that the pre-registration year was there to turn scientists into practitioners and that curriculum development should seek a good blend of natural and behavioural sciences for the pharmacy course (59).

1.11.1 Broad guidelines for the four-year course

Broad guidelines were set out by the Council and UK Committee of Heads of Schools for what the extra curriculum time would be used for, both in subject matter and teaching strategies. These include both syllabus and curriculum enhancements (4).

Syllabus Enhancements;

1. "Level-up" teaching, particularly in chemistry, at the start of the degree course, to ensure that all students are at an appropriate starting point for pharmacy studies proper.
2. All or most of the subject matter and laboratory skills acquisition from the three year degree course.
3. Enhanced pharmaceutical science content of relevance to practice.
4. Elements of pathophysiology and clinical medicine in greater depth than at present.
5. Cell and molecular biology and their applications in greater depth than at present including principles of gene manipulation and other aspects of molecular biology useful in diagnosis and treatment, aspects of modern immunology, other aspects of biotechnology.
6. Recently developed medicines formulation technology and approaches to drug delivery.
7. The further teaching of social and behavioural sciences, including health economics.

Curriculum Enhancements;

1. The fullest possible integration of the pharmaceutical sciences and demonstration of their relevance and application to practice.
2. The development of students communication, presentational, learning and problem solving skills.
3. For some students, undertaking of exchange placements with schools, departments of faculties of pharmacy, elsewhere in the EEC or beyond.
4. Teaching of pharmacy students in the clinical or community setting in all years of the undergraduate course, with significant teaching input from other health professionals.
5. Integrated teaching with students of other health care disciplines.

1.11.2 The RPSGB guidelines for approval of schools for the four-year course (60)

Each school of pharmacy was required to submit a syllabus as in years before, but for a four-year course, before the RPSGB could approve the school's four-year course. The purpose of basic pharmacy education in a four-year course remains the same. This is to produce graduates who can with appropriate postgraduate experience deliver the elements of pharmaceutical care and management with skills and knowledge underpinned by appropriate and sufficient understanding of the principles and techniques of the pharmaceutical sciences.

The RPSGB specified a number of new requirements for the four-year curricula which are listed below;

- a) A major addition to the new course, as set out by EC directives, is the inclusion of 3,000 hours of directed study (this is formally specified or required study including the taught element in all subject areas). A reason of the introduction of this form of study is to encourage the student to enhance their self-motivation for knowledge acquisition which it is hoped will create an ethos of commitment in life-long learning.
- b) A change in some of the objectives of pharmacy education. The majority of the objectives set out by the RPSGB remained as in the three-year course. An additional objectives was that the student should be able to recognise common disease states and make appropriate responses to presented symptoms. An objective deleted from three-year course guidelines is to have the awareness of the major sectors of practice of pharmacists and the main pharmaceutical organisations.
- c) A broadening or restructuring of subject areas within the course particularly the pharmacy practice syllabus.
- d) The specification that the very greater part of the curriculum and not less than 50% of the final year of the degree course is core content common to all students.
- e) That the components which deal with the actions and uses of drugs and medicines occupy no less than 35% of the curriculum, irrespective of the extent of specialisation and that at least 35% of the core course should involve the students in experimental work where own results are generated. The latter criteria re-emphasises the importance placed on practical work and result interpretation.
- f) That the degree course includes a significant research project of three to six months which is not just a literature review.

There is specific emphasis placed on the need for students to gain first-hand structured experience of practice, including, where possible and appropriate, contact with patients and practitioners of other health professions. The guidelines also stress that teaching and learning have the feature of positioning knowledge, understanding and capability in a pharmaceutical context, with frequent reference to current pharmaceutical practice. The emphasis on use of a variety of teaching methods including the use of problem-solving skills remains the same as the three-year course as does the compulsory criteria for satisfactory performance in a law and dispensing practice examination.

1.11.3 Subsequent debate on the science/practice balance in the four-year course

Taylor and Harding, two academics who regularly contribute to pharmacy education debate, have expressed concern that there has been little open debate or comment about the fundamental proposal to extend the course to four years, save for an editorial, a few letters and personal articles. The lack of debate about what the extended course should be used for is seriously worrying according to the authors and extension can only be justified if it results in better pharmacists. They envisaged that the more practice-orientated courses might be developed to take account of the changing nature of service delivery in community and hospital pharmacy. Yet the proposals indicate additional material be added through existing programmes and most of the new material be of a scientific subject matter (a euphemism for 'more of the same'). The authors stressed that a dispassionate, critical review of current and proposed courses is absolutely essential and must embrace the opinions of recent graduates, pre-registration tutors and teacher practitioners (61).

Greene argued that social and behavioural sciences should be no different to natural science as it studies people's erratic and contrary behaviour rather than precise data and universal laws. He also felt that pharmacy students spent long hours in the laboratory performing experiments, which serve to teach students little more than how to get through each one as quickly as possible with just enough data to produce a passable course work. He feels there is little case for introducing even more science into the course and that the RPSGB membership, the vast majority of whom should be in an authoritative position to tell academia what they require from their education, should make their views on the four-year course curriculum known to the Society (62).

However, Taylor *et al* have counter-argued that for pharmacists to be able to be more proactive in the extended role, they require a deep scientific understanding of the medicines before advising patients and that if pharmacy loses the science base, then we lose our right to call ourselves experts in medicines (63).

1.12 Pharmacy education research

Even with the introduction of the four-year course, there continues to be debate on balance between the science and practice or vocational element of the course. The impression gained by the debate on the four-year course is that other than consultation with Heads of Schools of pharmacy, no other opinion has been sought about what the course should provide. There is no evidence of RPSGB consultation with employers, pharmacists, recent graduates, students or pre-registration tutors. At the Academic Pharmacy Group Committee on March 15th 1995, concern had been expressed that even 'grass root' academics had not fully expressed their opinion on the implementation of the four-year course (53).

The nature and provision of pharmacy education in general will continue to engender much discussion and suggestions for improvement for the indefinite future. There will continue to be debate on the balance of science versus practice in a pharmacy course, as will there continue to be discussion on the ideal objectives and syllabus for a course. Extensive literature searches show that much of the debate and discussion is based on anecdotal comments made by a few interested members of the profession, in response to a suggestion or policy implementation by the Council of the RPSGB or by academics based on their experiences of pharmacy education. The literature has shown that in the UK, any research into pharmacy education has usually encompassed one school or one area of the country, and opinions of graduates and pharmacists on a nation-wide scale in the UK have never been sought either on the three or four-year pharmacy course.

In the USA however, the ethos of pharmaceutical education research is very different. The production of a highly respected pharmacy education journal, American Journal of Pharmacy Education, means that educational research on development of pharmacy in the USA is active and continuous. The fact that most students have to finance their own higher education, unlike the UK, may mean that levels of expectation of the student of the quality of their education may be higher.

The research by schools on provision of their pharmacy education will ensure that it is kept up-to date and fulfils new aims and objectives. In countries like Holland, continuous evaluation of opinions of graduates is a strong part of the development process of the curriculum. The literature shows that many medical schools around the world have recently restructured and redesigned their courses to meet the new challenges facing doctors in health care. The changes mainly involve increased emphasis on clinical pharmacy and experience and introduction of problem-based learning.

There are several well-known constraints to introducing change in pharmacy education in Britain to the extent of the USA or medical schools;

- a) Pharmacy is funded as a science subject category and any increase in emphasis on non-scientific, vocational or clinical teaching has to be balanced in light of the minimum theoretical and practical science content stipulated by the funding mechanism (10).
- b) The ethos and accreditation of pharmacy education is based on providing a broad base of scientific and practice-based teaching which the graduate can then use to develop knowledge and competence in a specific branch of pharmacy (18, 19).
- c) The majority of staff in schools of pharmacy are scientists whose priority has to be to develop their research expertise as many will have their career progression judged on this basis.

Nevertheless, research on the provision of pharmacy education is crucial as any important findings can be presented to the RPSGB and schools as evidence for necessary change. The following sections look at previous research findings which provided the impetus for some aspects of the present study from 1992 to 1996.

1.12.1 Reasons for choosing pharmacy study

Some work, primarily of American origin, has been done to examine the career selection of pharmacy students in the 1970s regarding the occupational factors of pharmacy as a profession (64, 65, 66). Ferguson *et al* conducted a study on an international scale of students in Australia, Canada and the USA which addressed social factors motivating pharmacy students toward a career in pharmacy. This study showed that women pharmacy students felt pharmacy offered a variety of employee categories and prospects of part-time employment opportunities (67).

The use of the Q-technique in the USA in a study examining attitudes of entering pharmacy students towards their profession found the primary factor defined by students for studying pharmacy was to want to help patients on an individual basis as well as to work closely with physicians (68). In the UK, a study in 1984 of pharmacy applicants called for interviews to study pharmacy at Bradford showed that the strongest factor influencing pharmacy study was the nature of pharmacy work (69). A 1985 survey of first-year pharmacy students at Manchester University that the factor chosen by most (61%) as a reason for studying pharmacy in this study were the career opportunities pharmacy provided (70). Both the UK studies showed a poor influence by school career sessions or advisers at that particular institution. It was therefore important for this study to consider some of the factors from these studies on a UK-wide basis. In addition, it was necessary to ascertain how important ability or interest in chemistry, a subject shown to be a backbone of many pharmacy courses, is in influencing pharmacy study.

1.12.2 The pharmacy syllabus content

An assessment in 1987 of how UK pharmacists, nurses and teachers were prepared for practice by education stressed that the lack of serious attention to the vocational and skills element was a weakness of courses such as pharmacy (71). In 1991, a study of final year Welsh pharmacy undergraduate students who were given a specialised communication skills training programme found that the time allocated in the three-year course was insufficient for adequate communication skills training. The study concluded that adequate time had to be allocated for the teaching of component skills of communication for the student to benefit and to adapt to the evolving role of the pharmacist (72).

Lublin's study in 1991 of graduates' opinions of the pharmacy course at the schools of pharmacy in Sydney and Melbourne, Australia shows very similar findings to this study. The Australian study showed Chemistry and Microbiology to be the least liked topics in the course. The main body of the results however, indicated the strong belief by respondents that the undergraduate curriculum should become more orientated to pharmacy practice and clinical pharmacy in order to better prepare the students (73).

In 1992, a survey of views at two British pharmacy student conferences found that many students believed that courses gave too much time to traditional academic subjects while not offering enough practice-based and clinical training.

Virtually all the students agreed that too much time was devoted to chemistry (74). In the same year, a survey of students from all 16 schools of pharmacy was carried out to determine the attitude of UK pharmacy undergraduates to the EC. A total of 80% welcomed free movement of professionals and accepted ideas of optional study of a second language in the course (75). Previous research with student groups carried out in the USA has shown a positive role of the inclusion in the pharmacy curricula of liberal studies, such as options in literature and languages. These offer students opportunities to broaden their interests and serve a multicultural society better as found in the USA (76).

Wilson *et al* conducted a study of a sample of UK hospital pre-registration tutors which showed them to be in general agreement with the topics in the three-year pharmacy curriculum. However, many components of pharmaceutical sciences and pharmacy practice were considered to be of limited importance relative to the clinical and pharmacological sciences (77).

These studies provided an insight into areas requiring further investigation in the first survey described in this study and conducted in 1992.

In 1993, Kharbanda *et al* found that UK community pre-registration tutors also to be in general agreement with the topics in the three-year pharmacy curriculum. However, the community tutors rated much more highly subjects in the area of pharmacy practice and the clinical and pharmacological sciences than those in the area of pharmaceutical sciences (78).

A 1993 survey of 302 Toronto graduates of varying years of qualification found that more recent graduates acknowledged there had been an increasing emphasis on clinically-orientated education at the school of pharmacy in Toronto (79).

A 1993 survey showed that there had been a significant increase in the number of teacher-practitioners in the UK since 1986. The survey found that most hospital teacher-practitioners were involved solely with clinical subjects and the community ones with pharmacy practice and related subjects (80). In 1993, a survey by Livingstone *et al* of 600 practising pharmacists showed that the concept of specialisation in an undergraduate course was supported by respondents. A majority supported career-orientated specialisation in the final year of the course (81).

A 1993 study of third year pharmacy undergraduates at the School of Pharmacy, London and all pre-registration trainees who had graduated from the school the preceding year found that a majority of respondents expressed an increase in time spent on teaching about drug misuse and about HIV/AIDS in the course (82).

1.12.3 Problem-based learning

There are different types of learning which encourage greater student participation and motivation for learning. Problem-based learning (PBL) can be used to integrate basic sciences and clinical experiences. Through the analysis of problems, students identify gaps in their knowledge and after self-study, apply newly gained information to problem-solving. In this way, the student uses a 'deep' approach to learning as opposed to 'surface' learning. PBL requires students to take responsibility for all aspects of the learning process. Small tutorial groups are combined with independent study as the main learning methods. Didactic methods of learning can be reduced but more importantly, should be made more relevant so that students can use and apply knowledge from didactic methods during problem-solving sessions.

The four-year guidelines recommend teaching using problem-solving skills where possible. However, there is no evidence in the guidelines to suggest that interactive student-centred learning or problem-based learning has been specified for particular areas of the four-year pharmacy course. There is also no evidence that opinion has been sought from recent recipients of pharmacy education on the merits of having this form of learning in a course. The learning in most UK pharmacy schools is still educationally conventional. Courses are characterised by a teacher-centred approach i.e. by the teacher controlling the course content and method of preparation. Emphasis is on teaching rather than learning.

A survey of teaching methods in schools of pharmacy in Europe by the European Pharmaceutical Students' Committee found that in the majority of countries, lectures occupied over 40% of the teaching time. Practical classes also contributed to a large percentage with fourteen of the eighteen schools showing 30% or more of practical teaching time. The study found that problem-solving methods were not used much and that it was an area requiring further development (83). The earlier analysis of lecture content in three-year courses supports the results of this survey.

1.12.3.1 Problem-based learning in medical education

The most widely adopted student-centred learning strategy in undergraduate medical education is problem-based learning (PBL). It's growth in medical schools can be traced back to McMaster University Medical School, Ontario who from their formation in 1962, designed their curriculum to emphasise student-centred learning. Over the years, the development has been continuous as each aspect of the curriculum is addressed, critically reviewed and where appropriate redesigned for students to achieve competence and participate in self-directed learning skills (84). The medical school at University of Linburg in Maastricht developed a student-centred problem-based learning curriculum in 1978 and student evaluation of this course over the years has shown it to be appropriate and suitable for judging student ability (85). It has been suggested that the use of innovative curricula based on problem-based or self-directed study may also mean that student selection may have to be based on different or broader criteria. Personal attributes, motivation and non-academic abilities such as communication skills may be equally important predictors of students becoming effective medical practitioners (86).

The introduction of a new problem-based curriculum in the first year of an Australian dentistry course found the course had a positive impact on students. The new course emphasised problem-based learning and student self-directed learning resulting in overall reduction of formal contact hours. The students felt the aims and objectives of the course were much clearer, there was more time to understand material and more opportunity to think for themselves. The new course had facilitated a more contextual and better-balanced learning environment for students (87). The introduction and development of problem-based learning in the medical curricula has continued in medical schools around the world (88,89).

1.12.3.2 Problem-based learning in pharmaceutical education

In 1988, a school of pharmacy at the University of Southern California adopted the goal of preparing students to be active problem-solvers. The students were required to work in small groups where they addressed real-world case problems throughout the curriculum. The teaching of pharmacy practice areas used real-life case studies in for pharmacy ethics and where possible teaching was carried out by multiple staff with different background knowledge. The students found the system both enjoyable and stimulating (90).

Many authors have called for structured problem-based, student-centred learning in the pharmacy curriculum for many years in the USA. This form of learning is considered especially suitable to the challenges of pharmaceutical care and education (91,92). Murawski *et al* report that adoption of this method of instruction will result in more caring practitioners. This method of learning encourages one on one interaction with faculty staff which is especially important in transmission of values that occurs in the professionalisation process (93).

This form of learning in the UK was introduced at the Leicester school of pharmacy in 1991 for the teaching of law and ethics. The learning in this area was student-centred and encouraged students to solve problems including ethical dilemmas (94). In a more recent report, the school of pharmacy at Strathclyde has recognised that pharmacy students required a strong science base, balanced and integrated with professional orientation, with both attributes presented and developed in an environment which fostered a problem-solving and interactive approach to learning. This approach to student centred learning encourages students to take responsibility for their own progress and promotes active rather than passive learning. To achieve this, group work in the form of tutorials and workshops encouraging a deep approach to learning were designed to back up lecture content. A carefully designed programme of practical classes supplements these learning formats which aid the development of interpersonal skills. These changes were introduced in the 1993-94 academic year and have so far shown the student to have an integrated approach to learning (95).

CHAPTER 2

PHARMACY PRE-REGISTRATION TRAINING

This introduction chapter discusses the development and current provision of pharmacy pre-registration training. The chapter looks at the role of the RPSGB in effecting training and describes some of the major changes made to the training format in recent years. The chapter also outlines the current training format and discusses the role of the tutor and employer.

2.1 Historical perspective of pre-registration training

The use of supervised training or apprenticeship in a branch of pharmacy has always been regarded as an integral component of pharmacy education and practice prior to registration as a pharmacist. This period of training has evolved over the years from being simply a means of ensuring supervised training before taking full professional responsibility to a structured and well organised system with well defined objectives and goals. In the 19th Century, apprenticeship was the principal method of initiation into the vocation of the chemist and druggist. The period of apprenticeship was haphazard and unsystematic, much depending upon the character and attainment of the master to whom the apprentice was attached. The quality of the apprentice's educational experience depended on the economic and social status of the establishment in which he served. As apprenticeship was undertaken before education and examination, the earlier the apprentice started the more the preliminary scientific education of the initiate was neglected (13).

By 1920, an apprenticeship of 4,000 hours was essential before the chemist and druggist qualifying examination. It could be then be served either wholly in retail or half in retail and half in hospital pharmacy. As discussed in Chapter One, 2,000 hours of apprenticeship was required for individuals following the pharmaceutical chemist qualification. In 1935, the PSGB Council were given power to lay down conditions under which apprenticeship could be served. Initially this continued to be undertaken before examination but from after 1958, students were permitted to undertake the period of apprenticeship after the final exam. It had to be completed before they could become registered as a Pharmaceutical Chemist. The minimum instruction was that the student completed a year of practical training in a community pharmacy, hospital or in the laboratory of a manufacturer.

Since 1967, the requirements for registration have been a degree in pharmacy and a period of 12 months' supervised practical experience in an establishment approved by the RPSGB. Half of this experience must be in either hospital or community pharmacy, and the rest either there or in industry, in agricultural and veterinary pharmacy, or in a school of pharmacy.

In the late 1970's, the Council of the PSGB responded to a groundswell of opinion that the pre-registration year should be used to give proper preparation for professional practice. Previous to this period, pre-registration training was seen as the vocational component of training for pharmacists and not much thought was given to the content or structure of training. The outcome of the Council's response was a report in 1980 which was the basis of the pre-registration scheme which ran until 1992 (96). After this report, a year of pre-registration training with supervisory criteria for tutors after a three year pharmacy undergraduate course became the accepted system. This system was based on the tutor appraising the student on a 13 weekly basis, based on their performance in that period. The appraisal was based on the tutor's observation of the trainee on a wide range of professional issues such as standards and demeanour, but there were no strict guidelines to assess a trainee deviating from normal expected performance (97). This meant that any trainee reaching a minimum satisfactory standard was considered capable of working as a pharmacist no different to one who had excelled during their training.

A further working party on Pharmaceutical Education and Training was established in 1982 by the RPSGB with one of their objectives being to recommend a pre-registration training which would be relevant to the practice of pharmacy for the foreseeable future (98). Soon after, the Committee of Inquiry appointed by the Nuffield Foundation produced the Nuffield Report. One of the objectives of the Committee was to review the pre-registration training of pharmacy graduates (16).

2.2 The Nuffield Report on Pharmacy; Pre-registration training (16)

The report by the Committee of Inquiry made some valid observations and far-reaching recommendations regarding pre-registration training. The report indicated three areas where the arrangements for the training system were wrong;

1. That the training year had been designed in isolation from the content and structure of the degree course. The report suggested that some of the criticisms levelled at the course at that time could be met by the training year, particularly in learning how to apply the scientific knowledge gained in the practical environment of one of the three main branches.

2. That the schools and teachers from the schools of pharmacy should have a more active role in the discussions of the ground to be covered by the training year. The school should be involved in the provision of educational sessions for the trainees and in part supervision of individuals. It was envisaged that the employment tutor would then have a better understanding of what schools were trying to achieve and problems faced and the school tutor would increase his understanding of how pharmacy is actually practised and be able to reflect this in his teaching.
3. That there was no test of competence at the end of the pre-registration period. Although the system at the time of regular assessment conducted by tutors was useful, it could be improved by a formal test which the students would have to pass to register. It was suggested that one or more written papers could be included, but the main emphasis should be on practical examinations and oral skills. It was felt this format of examination could be organised locally under the auspices of the RPSGB.

There were also some important recommendations made on pre-registration training;

- a) That the training should comprise of two six-month periods spent in any two of community, hospital or industrial pharmacy. This had been pre-empted by the many representations the Committee had received on the value of pharmacists having experience in more than one branch of the profession. It was also suggested that the RPSGB and ABPI discuss the number of places required by industry on a regular basis and then assist firms in making reciprocal arrangements between community or hospital employers.
- b) That a newly registered pharmacist did not have sufficient qualification to assume sole responsibility in a community pharmacy or hospital pharmaceutical department. The Committee proposed a year of experience in a relevant branch of the profession under supervision of a fully qualified or senior pharmacist before sole responsibility could be assumed in either of these two areas. This prescribed period of postgraduate experience would allow the pharmacist to gain sufficient confidence or experience in a highly responsible role.

A year later in 1987, the Council of the RPSGB adopted three main recommendations for pre-registration training made by the 1982 working party on education and training (98);

1. Re-definition of the objectives of the year, leading to more closely defined criteria for training.
2. The introduction of competence-based assessment in the 1993-4 training period.
3. The introduction of a registration examination held at the end of the training year in which a successful performance would allow the graduate to practice as a pharmacist.

The three observations or recommendations from the Nuffield report that have not been adopted by the RPSGB for pre-registration training are;

1. The examination is based on a two-paper MCQ format but not a practical or oral format.
2. There has been no implementation of a compulsory split training scheme which would give the trainee experience in two branches of the profession.
3. There has been no involvement of schools and teachers from the schools of pharmacy who the Nuffield Committee felt should have a more active role in the discussions of the ground to be covered by the training year.

2.3 Current aim and objectives of pre-registration training

The primary aims of pre-registration training as stated by the RPSGB are (i) to reinforce among pharmacy graduates/sandwich degree course students an awareness that they are to become members of a profession, and (ii) to develop further within them a professional attitude and a sense of responsibility (99, 100).

These aims have been translated into a number of specific training objectives (99):

- To give the trainee, experience of applying in practice the knowledge acquired during the undergraduate course.
- To emphasise that the trainee's positive attitude towards the training, is important if the aims are to be fulfilled.
- To facilitate the development of the trainee's awareness and understanding of professional ethics (this objective not listed in 1993 RPSGB Byelaws (100))
- To facilitate the development of a responsible attitude by requiring the trainee to reach a satisfactory level of competence in relation to the time spent on those aspects of pharmaceutical practice in which approved training is given.

- To develop the ability of the trainee to communicate clearly with members of the public and with members of allied professions.
- To give the trainee an appreciation of the pharmacist's role within the health service and the pharmaceutical industry, and within society in general.
- To give the trainee an appreciation of the need for continuing study throughout the professional career.
- To increase the trainee's awareness of the whole spectrum of pharmaceutical activities, including a direct involvement with patients in relation to the proper use of medicines and the promotion of good health.
- To give the trainee an understanding of the development, structure and functions of the RPSGB and of other pharmaceutical organisations.
- To bring the trainee to the commencement of a career in pharmacy practice, with a willingness to make professional decisions within current competence and a desire to continually improve competence through experience as well as study.
- To enable the graduate to pass the RPSGB practice-related registration examination.

One of the aims of the present study was to investigate whether some of these objectives had been met in the perception of pre-registration trainees and tutors. The Council of the RPSGB has stressed that each trainee should receive a uniform course of training throughout Britain, so this study was undertaken on a national basis (101).

2.4 The pre-registration examination

The pre-registration examination (also called registration examination) was introduced for the first time at the end of the 1992-93 training year. The Council expressed the view that there was an independent need to assess the ability of graduates to recall and apply knowledge gained both during the undergraduate course and the pre-registration year by means of a highly structured and objective method (102).

The examination comprises of two multiple-choice question (MCQ) papers, one of which is an open-book format allowing the use of reference books. This format has continued since the inception of the examination. In the annual pre-registration manual, the RPSGB publish an examination syllabus to indicate the topics to be tested in the examination (103,104,105,106, 107,108).

For the first five years of the examination (1992-1996), the setting, scoring, weighting and proportional frequency of questions reflected the emphasis on application, analysis and evaluation of content appropriate to the practising pharmacist. The topics were therefore classified as 'must-know', 'should-know' and 'could-know' and the examination questions and weighting of marks designed to reflect these priorities. The syllabus was divided into seven major sections, within which specific topics had differing priorities.

The seven major sections were (103,104,105,106,107);

1. The RPSGB and other pharmaceutical bodies: Legal, ethical and professional aspects: The NHS.
2. The basis of responding to symptoms including the major categories of symptoms and the appropriate responses for a pharmacist (all the topic categories in this section were classified 'must know')
3. Pharmacological and therapeutic aspects of the provision of a pharmaceutical service including the sale and supply of medicines, with particular reference to major adverse reactions, interactions and contra-indications (all topic categories were 'must know').
4. The use of reference books and other information sources in the practice of pharmacy.
5. The advisory aspects of a pharmaceutical service.
6. Physical pharmaceutical aspects of compounding and dispensing.
7. The principles of procurement, storage, and stock control of medicines.

The running of the examination was contracted out to an independent body, the London Pharmaceutical Consortium. They are responsible for devising the examination questions, drafting the papers, allocating examination centres and marking the papers. A Board of Examiners has been appointed by the RPSGB (one for England and Wales, and one for Scotland) for approving examination papers, for allocating pass or failure to candidates and for considering appeals against results (108). The questions are written by teams of writers organised by the London Pharmaceutical Consortium and by volunteer pharmacists, many of whom are pre-registration tutors.

Potential questions are reviewed and then pre-tested for ambiguities before they are included in a bank from which future examination questions are selected (109). This process is an on-going one but a large pool of questions had already been collected before the first examination.

In the first year of the examination, a pre-test was held at several sites in the UK which tested the questions for possible inclusion in the closed item bank. The London Pharmaceutical Consortium organised the pre-tests during the Easter period of 1993 (110). A fee of £100 recovered in two amounts was set for all pre-registration trainees to pay before sitting the registration examination. The fee to the RPSGB partly recovered the annual sums paid to the examination contractor (111).

A proportion of 93% of all the trainees in the 1992-93 training year, the first year of the examination, passed the examination. The examiners concluded that, overall, the results were good. However, the RPSGB stated that the examination would become more difficult in time, as candidates and their trainers become aware of what to expect (112). A report to the Education Committee of a provisional analysis of the first examination results in 1993 indicated that the overriding factors determining performance for most candidates had been innate ability or personal application. The report indicated that factors such as school of pharmacy attended, sector of employment or employer had no marked effect on candidates' scores. The report indicated that there was a strong correlation between the class of degree and success or failure in the examination. The correlation was even stronger in the case of those who had failed again after resitting the examination in October (113). The results of the first registration examination showed that of the failed candidates, 16 trained in hospital, 54 in community and 6 in industry.

More importantly was the distribution of failed candidates from schools of pharmacy. One school had 11 and two had 10 failures, which would represent approximately 10% of the total student number in that school in one year (114). This does not correlate with the report to the Education Committee which indicated that the school of pharmacy attended had no marked effect on candidates' scores.

Subsequently, 93% of candidates passed the 1994 examination, 88% passed the 1995 examination and 89% passed the 1996 examination at the first time of sitting the examination (115,116,117).

The passes and failures so far have been decided as candidates who score 70% or greater pass the examination, candidates with a score of less than 65% fail and candidates with a score between 65 and 70% are assessed individually. Candidates achieving the latter category of marks are deemed to have failed unless there is demonstrable evidence to elevate them to a pass e.g. performance in proven ambiguous questions or proven adverse circumstances (108). The examination can only be taken by candidates who have been graded 'satisfactory' overall by their tutor in the 39-week appraisal.

In 1996, the annual review of the examination was more extensive than normal. An invitation to tutors, other members and students was made to comment on policy and procedure of the examination. The major change arising from the review was a fundamental reworking of the syllabus. The Council accepted a recommendation that preparation for a new examination syllabus for 1997 should be implemented. The changes included would be a restructuring of the format and an updating of the content. Pre-registration trainers and providers would be informed of changes and if possible, a more detailed syllabus from 1998 onwards, incorporating detailed learning objectives and reflecting the possible enhanced training of tutors would be prepared (118). Although there was only to be a modest change to subject matter, there would be a marked reordering of the sections and an explicit move to make all examination questions relate to function and processes rather than structures (119).

The revision to the examination in 1997 means that any questions about the structure of organisations will test graduates understanding of the reasons for such structures (120). The 1997 pre-registration training manual shows some important changes in the examination syllabus. The aims and objectives of the examination are clearly defined in the manual and candidates are reminded that in addition to success in the examination, they also have to demonstrate an acceptable performance in the workplace before being deemed suitable to register as a pharmacist.

The examination assesses knowledge, the application of knowledge and professional cognitive skills. The pre-registration tutor assesses the practical and professional skills by assessing whether the trainee's workplace performance is acceptable.

The new 1997 examination syllabus has been divided into four units (108).

Unit A: The assurance of quality in all aspects of pharmacy practice

Unit B: The provision of a service to respond to symptoms and supply advice and information.

Unit C: The provision of a service to supply items against prescriptions and orders from practitioners.

Unit D: The structural and professional framework for the profession of pharmacy.

Almost all the subject categories in Unit A and all subject categories in Units B and C are now considered as 'essential for day-to-day practice' and at least 70% of questions in the examination will be drawn from these parts of the syllabus. The remainder of questions will be drawn from the rest of the syllabus (Unit D and non-essential subjects in Unit A) comprising material which candidates are 'expected to know'. The subjects within the units are not much different to previous syllabuses.

There has been, perhaps inevitably, much debate and discussion particularly from pharmacy students, past and present, and at student conferences about the structure and role of the examination (120,121,122,123,124). Concern has also been expressed about the pre-registration examination fee which all trainees have to pay (125). In addition, numerous letters written by students and pharmacists have been published in the PJ regarding these matters.

These are some of the concerns raised regarding the examination;

1. That the undergraduate course has already taught and tested many of the syllabus areas in the examination. One of the objectives of the examination is to assess the graduate's ability to apply, in professional practice, pharmaceutical knowledge gained during the undergraduate course and in the pre-registration year. The RPSGB have expressed the view that the pharmacy degree exists as a science degree in its own right. New graduates have a great diversity of practice-related knowledge. It is also expected that new knowledge will be gained during the pre-registration year. Therefore, the examination exists to ensure that a sufficient level of practice-based knowledge is possessed by all persons wishing to enter the register (126).

2. That a universal examination tests all trainees even though knowledge may have been gained in distinctly different branches of pharmacy.
3. That the MCQ format is inappropriate for testing practice-based knowledge gained in a practical training year.

There has been no documented research to determine the role or suitability of the examination. In addition, trainees' additional education needs specific to the examination have not been ascertained. These issues are explored in this study.

2.5 Competence-based training and assessment

The introduction of an assessment of the professional competence of intending entrants in the 1993-4 training period to the pharmaceutical register was partially due to the success of a similar programme adopted in New Zealand in the mid-1980's and by non-pharmaceutical occupations in Britain (102). Competence is described as 'the ability to perform consistently to the required standard'. A competence-based training programme defines the standards expected, which makes it easier for tutors to identify those areas in which performance is acceptable (109). The new training programme was designed to assess those aspects which every newly-registered pharmacist must be expected to perform, together with experience specific to each sector of practice for which no assessment of competence was required (109).

Originally, it had been intended to introduce core competencies i.e. things that all trainees should be able to do at the end of the year, together with sectoral competencies i.e. things they should be able to do which are specific to the sector or sectors of practice in which they have trained. The core competencies were piloted successfully with a group of trainees and tutors. The draft sectoral competencies were not well received by hospital and industrial practitioners but largely accepted within the community sector. There were significant concerns raised by the first two branches with many asking for a delay or further consultation before specific sectoral competencies were included. As a consequence, in 1993-94, only the core units of competence were introduced which would be assessed by community and hospital tutors (127). This meant that industry-based tutors would have no role in actual competence assessment. The 1997 pre-registration manual shows that this structure has not changed.

The core component requires tutors to assess their trainee's competence in those aspects of practice which are pivotal to the profession of pharmacy i.e. the generic aspects. The sectoral component comprises of a list of sector-specific experiences to be covered in a particular branch of training. No assessment of competence is required but the tutor should be confident of the trainee's potential to achieve competence after further experience after registration. The training manual provides helpful guidelines for the tutor and trainee on how assessment can be planned, carried out and reviewed. The manual also provides a list of sources where tutor and trainees can receive more information which may be difficult to provide in a pharmacy. These include CPPE packages and organisations providing courses specific to training needs.

2.5.1 Approach to competence-assessment

Competence-based training assesses the trainee's ability to translate learning into competent performance. Tutors are encouraged in the 1997 training manual to consider participation in a National/Scottish Vocational Qualifications (N/SVQ) course which is available currently. This course will help tutors implement and understand the principles of competence assessment. It is in effect a training programme for tutors to learn how to conduct competency-based training properly. This recommendation is new and not included in the 1993-94 manual, when the study evaluated tutors' opinions on competency training and assessment.

2.5.2 Format of the core competence-based programme

The programme has the following components;

- a) Units of competence, each relating to a work area. This comprises of the Professional Unit and Practical Unit.
- b) Elements of competence, describing what a person should be able to do within each unit.

The elements within the Professional Unit are i) demonstrate a professional approach, ii) communicate effectively, iii) work effectively as part of a team and iv) undertake personal and professional development. The elements within the Practical Unit are i) provide an effective service for the supply of treatment to patients, ii) provide an advisory and guidance service and iii) provide care and advice in response to the need for emergency aid or first aid.

- c) Performance criteria, specifying the standards of performance against which achievements can be measured.
- d) Definitions, clarifying performance criteria to assist tutors and trainees in their understanding.
- e) Underpinning knowledge, sufficient to underpin practice in a variety of situations.

There is also an onus on the trainee to provide evidence of competence which the tutor can evaluate to decide whether it meets performance criteria. The type of evidence includes projects, records of everyday work, certificates or qualifications e.g. first aid.

2.5.3 The actual core assessment format

The competence of the trainee is required to be assessed and not assumed. The tutor and trainee can arrange for a competence to be assessed by 'formal' observation of the trainee's performance in a performance criteria e.g. giving correct and clear advice to a patient. The tutor can decide competence based solely on evidence presented to him/her from the trainee e.g. evidence that incoming stock has been thoroughly checked against relevant documentation.

2.5.4 Sectoral experience

This section defines the experience and information specific to a branch of training which should be given to trainees in addition to the competence-assessment of the core component. Each item in this section for each branch is designated as either E or I. Items designated with an E status are to be covered by hands-on Experience of the activity. Items designated I need not be covered by hands-on experience, but by the provision of Information alone. A checklist summarising these items has to be completed by both tutor and trainee and submitted with the 26 week appraisal and again at the end of the year.

2.6 The 13-week appraisals

The tutors are expected to complete a appraisal form every 13 weeks based on the above system which provides a detailed indication in progress in aspects of the trainee's work, attitudes and personal behaviour. The tutor is also asked to give an overall assessment of the trainee's development at that stage. The tutor will be expected to use the appraisal procedure to acknowledge satisfactory progress and encourage further improvement, as well as to identify and correct deficiencies.

Trainees who are given an unsatisfactory overall assessment at the 26-week appraisal will be required to attend an interview at the RPSGB normally with the Secretary and Registrar, Deputy secretary or Head of the Education Division. An overall unsatisfactory assessment after 39 weeks will indicate that trainee will not be satisfactorily expected to complete the training in the next 13 weeks and in addition to their comments being sought, they will be invited to a RPSGB panel comprising a member of council, an academic, community, hospital and industrial pharmacist. The panel will consider the appraisal reports and on the basis of this interview either suggest registration or other requirements the trainee to meet before being eligible for registration (99, 100).

There are four headings which a tutor can choose one from to describe the trainee's status for each performance criteria in the 13-weekly appraisals;

1. Performance criteria not yet assessed.
2. Evidence indicates that trainee requires further training or experience to reach the required standard.
3. Evidence so far presented indicates competence but further evidence needed to confirm consistency.
4. Evidence demonstrates that trainee consistently achieves the required standard with little or no intervention.

It is expected that by the 39-week appraisal, the majority of entries will be under the fourth heading, indicating that a minimal amount of further training is required in the last 3 months of the year. The final appraisal is to confirm that any performance criteria outstanding from the 39-week appraisal have been achieved and therefore all the professional competences are possessed by the trainee. The tutor also has to declare whether it is their opinion that the trainee is now a fit and proper person to be registered as a pharmacist.

It has been suggested by one author that the new competence system may not entirely suit hospital trainees. In hospitals, pharmaceutical care tends to revolve around the seriously and acutely ill. The provision of such care calls for a different set of skills and knowledge than that called for in community practice. The emphasis in training for hospital pharmacy should be on ward and clinical pharmacy. The author felt that inevitably, training in these areas would decrease further as competencies required for the new training programme were tested (128).

A recent survey of hospital pre-registration trainers (designated by tutors in hospitals to assist with the training) in the former Yorkshire health region found that the main concern of the trainers was the extra resources and time required for the competence-based training programme (129). However, there have been no nation-wide studies of pre-registration tutors to evaluate their opinions of the new training process. This was an important area of investigation in the present study.

2.7 The pre-registration training premises

It is a requirement that pharmacy premises satisfy minimum standards and be subject to inspection before they are approved for pre-registration training. The approval is normally given for five years (99, 100). The approval procedure ensures that the appropriate reference books are available. In 1997, a grant of £4,740 pounds was made to each community pharmacy contractor employing a pre-registration trainee from the local Health Authority. (130).

2.8 Additional training during the year

The training in hospitals is usually organised so that students may gain experience of all aspects of hospital pharmacy, some of which may not be available in one hospital. The trainees from local hospitals in a local region may also have joint training days organised for them. The multiple community pharmacy companies tend to have their own structured programme with courses and study days built in which closely follow the RPSGB guidelines. Not all community-based tutors have this provision and trainees from the independent community sector can participate in a course organised by the RPSGB annually (131).

2.9 The pre-registration training recruitment system

The supervision of the arrangements for the pre-registration year is a matter for the RPSGB and has no responsibility or involvement from schools of pharmacy. The schools may facilitate the recruitment process by hosting employers for presentations and interviews, but do not influence the training itself. The following section is based on observation by the author from pre-registration recruitment procedures annually at Aston University, Birmingham. A pharmacy student usually selects their respective pre-registration training early in the final year of undergraduate study. The employing bodies use different methods to attract students to train with them.

Some of the large-chain community pharmacy employers envisage pre-registration training recruitment as a long-term investment. It is hoped by these employers that anyone undertaking training with them, will continue to work with them after training as a pharmacist.

2.9.1 Recruitment by large-chain community pharmacy employers

- a) A number of these employers will initially have an informal presentation to pharmacy students at respective schools of pharmacy highlighting the strengths and reputation of the employer's training system. This takes place before formal interviews are held and can be as early as in the second year of the course.
- b) The students can then apply for a pre-registration post with the employer in their summer vacation before the final year. Interviews are offered to applicants soon after commencing the final year. The RPSGB have produced a code of practice for pre-registration recruitment which states that employers should not hold interviews or make formal offers before the commencement of the final year (126).
- c) The interviews are held at a venue suitable to the employer or at schools of pharmacy. A pre-registration place can then be offered unconditionally either at a first preference venue or not. A candidate may also be put on 'hold' which indicates that the employer cannot offer them a place immediately but may do so after a period of time. The third option is either not to offer an interview or not offer a training place after an interview.
- d) The RPSGB Code of practice tries to ensure uniformity of procedure during recruitment. The guidelines as of 1997 indicate that any applicant offered a place must formally inform the employer of their decision within three days of the offer being made (108).
- e) The large chain community employers recruit very early in the final year and places are usually offered within the first few weeks of the first term of the final year.

2.9.2 Recruitment by independent and small-chain community pharmacy employers

- a) The forward thinking employers will arrange interviews at the same time as the large chain employers. These are done by advertising in the PJ or at schools of pharmacy. A larger number of these employers will begin offering places in the second or even third term of the student's final year. They are therefore targeting a much smaller group of students as most will already have obtained a place.

- b) Many of these employers will offer a year of training but with no prospects of a future career with them. However, they offer a small friendly environment with training in areas of business acumen and aspects that make independent pharmacy special to the communities they serve.
- c) A number of places are taken up by overseas students as the employer will obtain a year's work permit for them. For example, Boots the Chemists have a policy that they will not consider applications from overseas students.
- d) The recruitment opportunities by these employers has become increasingly diminished as the large chain employers have increased their intake for training to fulfil their own manpower shortages and in preparation for the fallow year 2000.

2.9.3 Recruitment by hospital pharmacy employers

- a) The hospital training is co-ordinated centrally by a body set up to receive and distribute training application forms. In previous years, application forms were sent by students applying for hospital training in the first term of the final year to the central body. The applications are then sent to the hospitals selected by the student. The interviews were then conducted towards the end of the first term and through the second term.
- b) As of 1996, the application forms are now sent to the central body in the summer before the final undergraduate year so that interviews can be held in the early part of the first term of the final year. This has been enforced to try and increase recruitment and avoid 'losing out' to the community sector.
- c) It has been observed that in 1997, many students had been interviewed by hospitals before the dates of the large-chain community interviews.
- d) A candidate will be interviewed by some or all of the hospitals selected and an offer made. However, unsuccessful candidates can re-apply through a centrally organised clearing process.

2.9.4 Industry-based training

- a) The candidates normally undergo rigorous first and second interviews as normally very few places are offered by any one industry. There may or may not be a possible incentive of future employment depending on the policy of the industrial employer.
- b) Some of the industries require applicants to use their own initiative to apply to them whereas others select certain schools of pharmacy to interview students.

Clearly, the process of recruitment is varied and becoming increasingly aggressive as the pharmacist manpower shortage worsens. The BPSA has previously called for a co-ordinated system of pre-registration recruitment (132). However, other than the RPSGB Code of practice, which is not a compulsory guideline, there are no regulations controlling this process.

2.10 The pre-registration tutor

The Council requires each tutor to (108);

1. occupy a full-time position at the premises
2. have been registered as a pharmacist for at least three years
3. have been working for at least three years in the sector of practice in which they are acting as a tutor.
4. meet the Council's continuing education target.

Pharmacists wishing to act as tutors are required to furnish a declaration of their undertaking at least 15 hours a year of continuing professional development, together with details of such (133). Also, currently, the tutor is required to accompany their pre-registration trainees to attend a minimum of two branch meetings of the Society which may provide some continuing education (134). A 1992 study of community tutors in Scotland found that in most cases, tutors had been supervising graduates over their entire professional lives (135).

As early as 1993, the BPSA have called for training of pre-registration tutors. At the 1993 BPSA conference, members called for a selection procedure and monitoring of tutors. The members felt that with the introduction of competency testing and examination, there was a greater emphasis on the role of the tutor who would require better training to ensure a trainee was successful (136). Following this, at the Annual General Meeting (AGM) of the RPSGB in 1993, the BPSA proposed this motion passed at their previous conference. An amendment to the motion was put forward by a practising pharmacist indicating that the Society should improve training and monitoring procedures for tutors but ensuring the right balance was struck between making this and placing too onerous a burden on tutors. This motion was carried at the 1993 AGM (137). In addition, to ascertaining views on competency training, the training experience and continuing education participation of tutors was investigated in this study.

2.11 The concept of a split training year

A motion for a compulsory split training year was proposed by the BPSA as early as 1984 which was then recommended in 1987 by a RPSGB Council working party, with the objective of producing pharmacists with broad knowledge and skills. In 1994, the Council indicated that they would be considering a proposal for the long term objective of a community-hospital joint pre-registration year (138). This was further supported in 1995 by the acceptance by the Council to acknowledge it as a policy for review after consulting interested employers and students (139). The BPSA again underlined, in 1995, its' support for a split pre-registration year accompanying the new extended four-year course (140). A letter was written by the RPSGB in September 1995 to all pre-registration training providers and other organisations with an interest or involvement in training. The letter asked for comments to be sent regarding the issue of a split year before Council discussed the subject (141). However, the Council, decided in April 1996, that it no longer intended developing a mandatory joint pre-registration year mainly of six-month periods in both community and hospital pharmacy. The new policy designed in 1996 aims to achieve the same objective by specifying broad outcomes of training rather than requiring a certain structure to the year. The objective now is to prepare outline proposals for a strategy to define necessary outcomes additional to those currently included within the core competencies (142). A further RPSGB letter was sent in May 1996 to the all individuals who had responded to the September 1995 letter. The letter explained the reasons the Council had rejected a compulsory split training scheme. The letter indicated that in general, the schools of pharmacy had been supportive of the principle of a split year. The respondents to the September 1995 letter identified numerous practical issues which needed resolution before a split year could be implemented. The main concerns were the lack of time a 6-month period in one branch presented to cover issues in depth, the need to define carefully the roles and responsibilities of each tutor in the arrangement and which tutor would actually 'sign off' the trainee (143). However, it seems that the Council have not discounted the possibility of a structured and compulsory smaller period of time spent in another branch of training. The minutes of the June 1996 RPSGB Council meeting state that as result of moving to a set of enhanced competences to be expected of all new registrants, the main consequence is that some split of the total period between hospital and community practice may be essential since a broader range of competences may not be easily obtained in one sector alone (17). The issue of a split training year has been evaluated in this study from the perspective of trainees as it has been an area of considerable contention.

CHAPTER 3

RESEARCH METHODOLOGY

This chapter provides an overview of different methodologies used in social and pharmacy practice research in the context of the aims of the study. The advantages and disadvantages of these methods is briefly discussed.

3.1 INTRODUCTION

The following methods of data collection are available in social science research investigations;

- a) the examination of published literature and statistics.
- b) self-completion postal questionnaires
- c) semi-structured face to face interviews with key informants.
- d) observation
- e) focus groups

The research data of the project was gathered using methods a, b and c. All of these methods offer advantages but suffer from some drawbacks.

3.1.1 Published literature

The research began with a literature search, which was undertaken to become acquainted with developments in pharmacy undergraduate education and the pre-registration training year. The search also confirmed initial suspicion that little research had been conducted in this area, particularly in obtaining information and data from recent recipients of an undergraduate pharmacy course and pre-registration training tutors. The literature search involved consulting textbooks for background material on the history of pharmacy education, indexing journals for relevant papers in periodicals, reports and Government publications, as well as scanning professional journals for papers and articles on education. Another source of literature was the information made available by the RPSGB which included summaries of syllabuses numbers of students in all schools of pharmacy and policy documents of the RPSGB Education Committee.

3.1.2 Questionnaires

This study primarily uses data collected by self-completion postal questionnaires. The principal advantage of this method is the ability to collect large amounts of data at minimal cost (144). This is especially true when the sample population is widely dispersed geographically. When the population to be studied is large and dispersed other methods of social investigation, such as interviews, become impractical due to limited resources. Many of the surveys used in this thesis were used to ascertain the opinions or responses from large populations, which necessitated the use of postal questionnaires.

The other advantages of questionnaires are;

- a) All respondents complete the questionnaire at approximately the same time. This prevents any distortion of the results due to the passage of time, which can occur when many people are interviewed by a small number of interviewers.
- b) The questionnaire is impersonal. That is, there can be no observer bias, provided that the questions are structured in as unbiased a way as possible and are unambiguous.
- c) It is possible for the questionnaire to be filled at the recipient's convenience (145). If the recipient is busy, they have the opportunity to complete it when it is suitable for them.
- d) All respondents have exactly the same questions, in the same order, using the same words (145). This is unlikely to be the case in an interview where interviews can anticipate questions and supply answers in advance of a set question. In addition, an interview format can lead to the interviewee offering responses which they feel will 'please' the interviewer rather than the most honest or objective response.
- e) Questions can be either open-ended or closed-ended. Open-ended questions leave space for the recipient to write a reply, whereas closed questions require the respondent to select one or more responses. It is possible to combine the two types of questions by giving a series of responses but leaving space for comment if the respondent finds the available responses inappropriate.
- f) Questionnaires can be designed for recipients to fill in within a very short period of time. The questions can be designed so that the recipient has only to circle or tick a response and in some cases, is not required to give any qualitative information.

Closed questions can be designed to answer questions based on extent, strength or conviction of an emotion or feeling. It can also be used to rank a list of variables in order of importance or occurrence by the respondent. It is often more important to create closed questions and divide people along an imaginary line rather than capture every nuance of opinion. This facilitates the analysis of results, as the population of respondents can be separated into distinct, heterogeneous groups. Open-ended questions allow respondents to qualify their answers and give reasons for their views (145). However, although open-ended questions are harder to analyse, they can be important when dealing with beliefs. Some analysis is possible by content analysis, where the number of times a particular point is made is counted.

As a rule, closed questions are used when the alternative replies are known, limited in number, and clear cut. Open-ended questions are particularly suitable for complex issues, where the range of replies is not known. Open-ended questions inevitably use more space and make the questionnaire less appealing to recipients. However, they can be useful in pilot studies for collecting a full range of views or opinions.

Questionnaires suffer from a number of disadvantages. These are;

- a) The danger of a poor response rate through the indiscriminate use of questionnaires. It is important to explain to the recipient in a covering letter or on the questionnaire the nature of the study and reasons it is considered important to the researcher. It is also useful to describe the context in which the results of the study will be used and positive effects it may have for either the researcher or recipient. Many questionnaires ascertain information of a sensitive nature from the recipient and it is important to stress that the confidentiality of respondent will be ensured and no individual respondent identified.
- b) Poor response rates can drastically reduce the validity of results, as can a sample of respondents that are not representative of their population. The validity of data must be questioned when either only a few responses have been obtained, or when only a small percentage of the sampled population have responded. For the results of a survey to be useful, the numbers involved should be large and should represent a large proportion of the total sample.
- c) It is difficult to ask in-depth questions, as this risks an increase in non-response due to complexity and a greater amount of time needed to complete the questionnaire. This can lead to a lack of detailed information in the results.
- d) There is always the possibility of people marking the wrong box accidentally. It seems likely that this constitutes only a small source of error in a well laid out questionnaire.
- e) Completing a questionnaire requires the recipient's time without providing any immediate benefit (145). The researcher can however, stress potential long term benefits for the recipients as mentioned above.
- f) There is a need to translate shorter technical language into longer everyday speech, which all recipients can understand. This reduces the number of questions that can be asked, or increases the length of the questionnaire, with the attendant risk of a discouraging response.

- g) There is a high degree of self-selection in response (146). That is, recipients who have strong feelings about the subject of the questionnaire are more likely to respond than are recipients who are indifferent to the subject. Consequently, a section of opinion, that is those with strong feelings, may be represented in the results.

The greatest problem of surveys is undoubtedly that of non-response. This phenomenon varies with the sample population, depending on factors such as the literacy of the population and the level of interest in the subject around which the survey is based. Response rates are also influenced by the design of the questionnaire, its appearance and the text of the accompanying letter. The inclusion of a reply envelope is essential and sending a second mailing to non-responders if possible will also serve to increase the response rate.

3.1.3 Interviews with key informants

The principle application of the interview format in social science is “its use for the purpose of making people talk about themselves” (147). An important characteristic of this format is that the interviewer relies on the good will of the respondent. The aim of a research interview is to get truthful information from people on a subject about which they are under no obligation to give. In a structured or semi-structured interview, all the questions are decided precisely in advance, but there is no hard and fast line between a structured and unstructured interview format. The optimum format may lie between these in which varying degrees of control are exercised by and over the interviewer (145).

In this thesis, the semi-structured interview format was used to obtain information from pre-registration tutors regarding nuances in training system in different branches of the profession. The information obtained from the interviews was then used to design an appropriate questionnaire for tutors from all branches to respond to. The interview format is useful in obtaining first-hand information from a small number of individuals but is limited in use in large group studies (148). It is extremely difficult to use this format for a whole population of for example, pre-registration trainees or tutors, as the time and financial restraints outweigh the benefits.

3.2 Sampling the population

When the whole population that is of interest to the researcher is large, it may become difficult to survey all the individuals in that population, due to limited resources. It is sometimes necessary to choose a representative sample of the population.

In the project, several sampling methods were used;

- a) Using all or most of the whole population to try and ensure that the responses will be representative of the population. All or almost all of the whole population was used for three of the surveys described in this thesis.

Chapter Four: Approximately 90% of all the recently graduated pharmacy students were surveyed at the beginning of pre-registration training.

Chapter Five: Approximately 85% of the whole population of 1992-93 pre-registration trainees were surveyed just after mid-way of the training year.

Chapter Eight: The whole population of pharmacists who registered to practice in 1993 were surveyed in 1996.

- b) Selecting samples randomly, using a facility for generating random samples on computer. This format was used for two of the surveys described in this thesis.

Chapter Six: Approximately 30% of the whole population of pharmacists who were newly-registered in 1993 were surveyed a few months into practice. The random sample was generated and provided by the RPSGB.

Chapter Seven: Approximately 55% of the whole population of pre-registration tutors in the 1993-94 year were surveyed. The random sample was selected using a RANDGEN program, written in the Basic computer language (149). This programme was designed by Professor William Irwin of Aston University in Birmingham in 1993. In order to obtain a random sample of any population, it is necessary to have available a complete list of all the population concerned (145).

3.3 The mailed questionnaire

The surveys described in this thesis were all designed as self-completion postal questionnaires. The advantages of this format have been discussed, particularly with regard to the accessibility of this system for a wide ranging population. The questionnaires were accompanied with a cover letter explaining the nature and purpose of the research project and enlisting the respondent's co-operation.

The letters emphasised the importance of receiving the opinion or information from the individual surveyed. It is important to convince the respondent that the study is worthwhile and that their co-operation is important. There is universal feeling among researchers that response rates would be damaged if respondents were required to supply their own envelope and postage cost. A business-reply printed envelope may indicate a professional, prestigious long-term organisation, which may enhance response rates (148). A reply-paid envelope was included in all the postal questionnaires for the respondents to use.

It is important that the individual, particularly working in a pharmacy, does not receive the questionnaire during for example, the Christmas period when the retail sector is extremely busy. The questionnaires were posted with the aim of arriving during the later part of the week. This would ensure the individual responded to it either at work or during the weekend where there may be more free time. A previous study had shown a significantly better response when questionnaires were received by respondents late in the week (150).

In 1981, Heberlein and Baumgartner concluded from a study of 13 surveys on the effectiveness of a reminder for non-respondents. However, they were not clear whether response was increased if a replacement questionnaire was included with a reminder letter (151). In four of the surveys described in this thesis, a reminder letter with a replacement questionnaire were posted to non-respondents. It was felt that pharmacists, particularly in the community sector, tended to receive a deluge of mail daily and there was a higher tendency to dispose much of it without replying.

3.4 Adequate response rate

There is some evidence to suggest that response rates of postal questionnaires are declining probably due to saturation. Social research has increased in pharmacy with the concern that pharmacists receive surveys on a regular basis from different researchers, thereby reducing their motivation to respond. A professional researcher, Babbie, suggests that 50% is an adequate response for analysis and reporting, 60% is good and a response rate of 70% or more is very good. However, there is no statistical basis for this indication but a demonstrated lack of response bias is far more important than a high response rate (152).

3.5 Questionnaire structure

The design of a questionnaire including the structure of questions hugely influences the time spent by a subject in completing a survey and response motivation. A careful balance has to be drawn between open-ended questions in which response categories are not specified and closed-ended questions in which the respondent selects one or more of the specific categories provided by the researcher (148).

There are several advantages to using closed-ended questions;

- a) the answers are standard, comparable between respondents and easier to analyse.
- b) the respondent is often clearer about the meaning of the question.
- c) they are usually easier to answer as a respondent has to merely choose a category rather than formulating an original answer.

A major disadvantage of these type of questions is that it frustrates the respondents either because the categories offered do not fulfil their response or no opportunity is provided for them to quantify or clarify their response. Although open-ended questions allow freedom of expression, they are extremely difficult to analyse and will be time-consuming to answer.

The questions used in the surveys in this thesis fall mainly into four categories of response;

1. Nominal response offered by;
 - a) questions ascertaining factual profile information e.g. age, sex, ethnic origin, branch of work etc. for which options were provided for respondents to choose.
 - b) open-ended questions ascertaining factual information where a specific answer is expected e.g. school of pharmacy attended.
2. Ordinal response offered by;
 - a) closed-ended questions offering a range of responses of increasing or decreasing strength for respondent to select one which corresponds most to attitude or feeling.
 - b) ranking a set of statements relating to one aspect in preferential order.
3. Interval response offered by;
 - a) questions where intervals between ranks are equal and it is sufficient to ascertain the group in which the response falls rather than an exact figure e.g. number of hours worked.

4. Open-ended response offered by;
 - a) questions asking for written response to a specific area where it is expected a wide variety of responses will be received e.g. training methods employed by tutors.

The placing of a middle response in closed-ended questions increases the number of respondents who give a middle response by about 10 to 20 percent. It is found that most respondents would answer a polar category if the middle category is not included (153). It is therefore not an uncommon rationale to omit this middle category response to force a definite opinion from the respondent. The survey in 1996, described in Chapter Eight, did not include a central neutral opinion for ordinal responses. This response which may be categorised as a 'neutral', 'don't know' or 'unsure' response was used in all the earlier surveys.

3.6 Pilot work

Questionnaires must be composed and tried out to make certain that they are valid and ask the questions for which information is needed. Piloting can help not only the wording of questions but also the ordering of question sequences and the reduction of non-response rates. It is essential to pilot every question, every question sequence, every inventory and every scale in the study. The earliest stages of the pilot work are likely to be exploratory and primarily concerned with the conceptualisation of the research problem (154). The latter stages of pilot work include the use of a draft questionnaire to survey a small sample of the subject group to be used. The pilot sample can be asked to respond to the questionnaire with a view to commenting on questions not understood or difficult to understand. A pilot study can however, involve surveying a sample of the study population without requesting for assistance, the response rate and actual responses then used as a guide for improvement of the draft. The respondents in the pilot studies should be as similar as possible to those in the main study, that is they should be a judgement sample. There are however no set recommendations as to the number or proportion of individuals from a study group to be used for the pilot study (154).

3.7 Data analysis

All data was analysed using the Statistical Package for Social Science (SPSS-PC) software (155). Data was entered from the questions into electronic format using the SPSS Data Entry program (SPSS/DE). Data Entry offers greater convenience in recording responses, as well as powerful error checking features (156).

There are various methods used to present results in the thesis

3.7.1 Percentages

The computation of percentages is generally the most common form of presenting data (148). The advantage of the SPSS-PC program is that it calculates both the percentage based on the total number of respondents who answered a particular question and on the total number of respondents to the questionnaire as a whole.

3.7.2 Bivariate presentation or Cross-tabulation

This presentation allows to questions to be placed together in a single table in such a manner that their interrelations can be examined. In cross-tabulations, all combinations of all categories of response are presented. This allows cross-comparison of results within a questionnaire. For example, it is then possible to find out how many male respondents agree to a statement compared to female respondents if it is necessary.

3.7.3 Trivariate tables

This format allows cross-comparison between three dichotomous variables or questions. Using the example above, it then becomes possible to compare the difference between White males and females and Asian males and females with their agreement to a statement in the questionnaire.

3.7.4 Chi-square test

The most commonly used test of significance for independence for nominal and ordinal variables. The chi-square test allows a test of significance which simply means that within a statistical margin of error, a relationship exists between two variables. A null hypothesis is set up based on a assumption or an expectation. For example, it should be expected that people with high education also have high income.

A chi-square test can be performed therefore to support or reject the hypothesis showing education making a difference in predicting an individual's income. The normal level of significance used in social research is $p=0.05$, which effectively means that if the null hypothesis is rejected, there is an error 5 times out of 100 (148).

3.7.5 Rank order analysis

Some questions require the respondents to rank a selection of factors related to an aspect of the survey for example in a question offering a choice of changes which would improve a work environment. In this situation, normally rank 1 would represent the factor that would indicate highest preference or most improvement. As the ranking continues e.g. 2, 3, 4, 5 etc. for a factor, the preference or importance of that factor decreases.

The overall rank order for each factor has been adopted from a similar method used to analyse job satisfaction dimensions of Australian community pharmacists (157).

Example: Respondents are given six factors A, B, C, D, E, F that apply to them choosing a particular country for a holiday. The respondents are asked to rank each factor so that Rank 1 means this factor is the most important reason for choosing the country of holiday down to Rank 6 which is the factor of least importance for choosing that country.

A total of 52 respondents rank factor A from 1 to 6. The numbers selecting each rank for this factor of change A are;

Rank 1= 6 respondents

Rank 2= 12 respondents

Rank 3=14 respondent

Rank 4= 8 respondents

Rank 5= 3 respondents

Rank 6 (last)= 9 respondents

Calculation for Overall Rank order for Factor A

Multiple each rank with number of respondents selecting it, add the totals all up for that factor and divide by the total number of respondents to that factor.

$$(6 \times 1) + (12 \times 2) + (14 \times 3) + (8 \times 4) + (3 \times 5) + (9 \times 6) = 173 \text{ divided by } 52 = 3.327$$

The overall rank order for Factor A is 3.3, which implies that it not a factor regarded as most important by respondents in choosing the country of holiday. Factor A has some importance, as it's overall rank order is half-way between 1 and 6.

The lower the rank order, the higher the overall preference or the higher its importance in introducing change. The reason for this inverse relation is that selection of lower ranking numbers e.g. 1, 2 indicates the factor is of highest preference or importance.

CHAPTER 4

Survey of pre-registration trainee graduates who had just completed undergraduate pharmacy education in 1992

This chapter describes the results of a self-completion postal survey conducted in 1992 distributed to the whole population of newly qualified pre-registration trainees who had registered with the RPSGB by August 1992.

The results of this survey and discussion focus on four main aspects;

- determining the reasons pharmacy is chosen as a future career.
- assessing the usefulness and content of current and proposed future topics in the pharmacy undergraduate curriculum.
- investigating factors of importance in the selection of a pre-registration training location.
- obtaining early perceptions of the training year just commenced.

4.1 AIMS AND OBJECTIVES

4.1.1 Aim of survey

The cohort involved in this study were those graduates who had registered to undertake their pre-registration training from August 1992 to the summer of 1993. The survey was sent to the cohort in August 1992, a few weeks after commencing pre-registration training. These were a unique group of people as they were the first to sit the registration examination in July 1993. The survey was designed to obtain information from this group on three major issues. There were therefore three major aims of the survey;

1. To assess the factors that had influenced the decision of these graduates to choose to study pharmacy.
2. To explore the perceptions of these recent graduates towards pharmacy course content and design in 1992.
3. The final aim of the survey was to investigate the factors that had motivated this study group to select their particular pre-registration training location and ascertain early perceptions of the training year.

The development of an agreed syllabus which adequately reflects the scientific and vocational aspirations and demands of pharmacists requires a multidisciplinary approach. Ideally, input from all branches of the profession (RPSGB, academics, industrial, hospital and community pharmacists, employers in industry, pre-registration tutors) and Government (Department of Health) is required. In addition, to provide an overall picture of the role and development of pharmacy education, the opinions and requirements of recent graduates must be considered. There have previously been a few small-scale surveys of students and graduates from individual schools on matters relating to pharmacy education, but no attempt has been made to ascertain opinions of new graduates on a UK-wide basis. Similarly, there is no documented evidence of opinions sought on a nation-wide basis linking education to pre-registration training. Recently qualified graduates, who had just commenced their pre-registration training, were considered to be the most suitable study group for this survey. This was because they had the most recent experience of the complete undergraduate course.

This aspect of the survey included gathering data on the perceived usefulness and content of pharmacy undergraduate subjects in the three-year course, evaluate suitable new topics and useful learning methods. There was also likelihood at the time that the course would be extended to four years in the future, and any important findings in this survey, would therefore provide useful evidence for consideration in an extended course.

4.1.2 Objectives

- To obtain a profile of trainees which included;
 - a) the branch of their pre-registration training.
 - b) the branch of pharmacy they were most interested in working in the future when they chose to study pharmacy.
 - c) gender.
 - d) the school of pharmacy attended.
 - e) ethnic group.
- To determine the influence a group of pre-determined factors had on influencing the trainees to choose to study pharmacy
- To determine the usefulness of topics in the undergraduate course based on knowledge required to practice effectively
- To ascertain opinion on changes required in time allocation of topics in the course.
- To evaluate suitable new topics for inclusion in a course.
- To determine level of agreement on pre-determined statements regarding the undergraduate course.
- To identify the factors that had influenced the selection of branch and venue of pre-registration training.
- To ascertain opinion on a range of statements regarding the role of pre-registration training.

4.2 METHODOLOGY

4.2.1 Survey population

The survey population was all graduates entering pre-registration training in England, Wales and Scotland in 1992. The address list supplied by the RPSGB comprised of all those pre-registration trainees who had registered by a week before the date training had to commence as directed by the RPSGB. It was later found that the list included trainees from every school of pharmacy in the UK except Bradford. Students from this institution were not included in the address list because of their integrated four-year sandwich degree programme. It was also found that only those graduates from Queens University, Northern Ireland who were undertaking their pre-registration training in England, Scotland or Wales, were included in the address list.

4.2.2 Pilot study

Initially, a pilot questionnaire was sent to a sample of 30 graduates from the database supplied which included a representative from every school of pharmacy. The sample was selected at random. It was possible to do this as each address included a registration number, part of which corresponded to the school of pharmacy. The pilot sample were asked to comment on the questions and layout. They were also asked to highlight questions which they had difficulty in understanding. The main concern was the questions ascertaining usefulness and time allocation of individual undergraduate curriculum topics. All the topics had been listed after careful analysis of the undergraduate syllabus of every school of pharmacy. It was important that the survey group were aware of each topic listed and that it had been taught on their course, even if under a different title. For example, clinical pharmacy has different titles at some schools. The pilot questionnaire therefore asked the trainees to confirm whether they understood the topic 'clinical pharmacy' and its teaching content. The pilot questionnaire also asked the sample to add any topics on the list they felt had been taught at their school but not included in the pilot.

There were a total of 20 responses which proved to be extremely useful in re-designing the questionnaire both in terms of structure and length. It was also extremely beneficial that a response was received from a graduate of every school except Belfast and Bradford. The author believes that this strongly contributed towards the high response rate achieved. The main revision of the questionnaire resulting was to include a wider range of topics in 'Pharmaceutical Chemistry'.

4.2.3 The survey

Following the pilot study, questionnaires were sent to the remaining nine-hundred and fifty-two (952) pharmacy pre-registration graduates towards the end of August 1992 at the address of their pre-registration training with a covering letter and a reply-paid envelope. A total number of 1,159 pharmacy students graduated in the UK in 1992 (26). Of these, 952 individuals representing 82%, were used for the survey. The questionnaires were treated in strict confidence and the only identification of individuals was to enable a follow up non-respondents. A follow up reminder for 450 non-respondents was sent a month later.

4.2.4 Questionnaire structure

The majority of the questions were closed questions requiring the respondent to select one or more responses from a menu style checklist. Closed questions were felt to be most appropriate due to the ease with which they can be answered. One of the questions required respondents to rank items in order of preference. The number of ranking questions was kept to a minimum as the completion of such questions is known to be more cumbersome (158). The remaining questions were a combination of those requiring the respondents to circle one or more numbers corresponding to an appropriate response and those designed with a Likert scale whereby respondents were asked to for example, agree or disagree with a statement along a five-point scale (i.e. strongly agree, agree, indifferent, disagree, strongly disagree). Two of the closed questions also contained a supplementary open questions asking for further comment. Open questions were not widely used as, although these are capable of eliciting a wide variety of responses and provide more in-depth data, they are difficult to analyse and are often ignored by respondents (158). A copy of the questionnaire used in this survey is in Appendix 1.

4.2.5 Analysis of results

The total usable 695 responses, were entered into a SPSS Data Entry II programme and then analysed using the SPSS/PC programme. This program has been described further on p.97 of the methods chapter. The statistical test employed was the chi-squared test which has been described on p97-98. All results stated as significant are at a level of $p < 0.05$ unless a highly significant value of $p < 0.005$ is stated next to it.

4.3 RESULTS

4.3.1 Response rate

Five hundred and two (502) pre-registration trainees responded to the first questionnaire and a follow up of the non-respondents a month later resulted in a further one hundred and ninety five (195) responses. Of these, 2 responses were unusable, which allowed a total of 695 responses to be analysed. This represented a total response of 73% ($n=695$) of the 952 questionnaires sent.

4.3.2 Branch of pre-registration training

Q1. 'Where are you working your pre-registration year?:'

The results in Table 4.1 show the number and percentage of respondents and the branch of pharmacy in which they undertook their pre-registration training.

Table 4.1: The number and percentage of respondents and branch of pre-registration training (n=695)

Branch of pre-registration training	Number (n=695)	% of respondents
Community pharmacy	384	55.3
Hospital pharmacy	262	37.7
Hospital and Industry (6 month split)	41	5.9
Community and Industry (6 month split)	6	0.9
Community and Hospital (6 month split)	1	0.1
Other	1	0.1

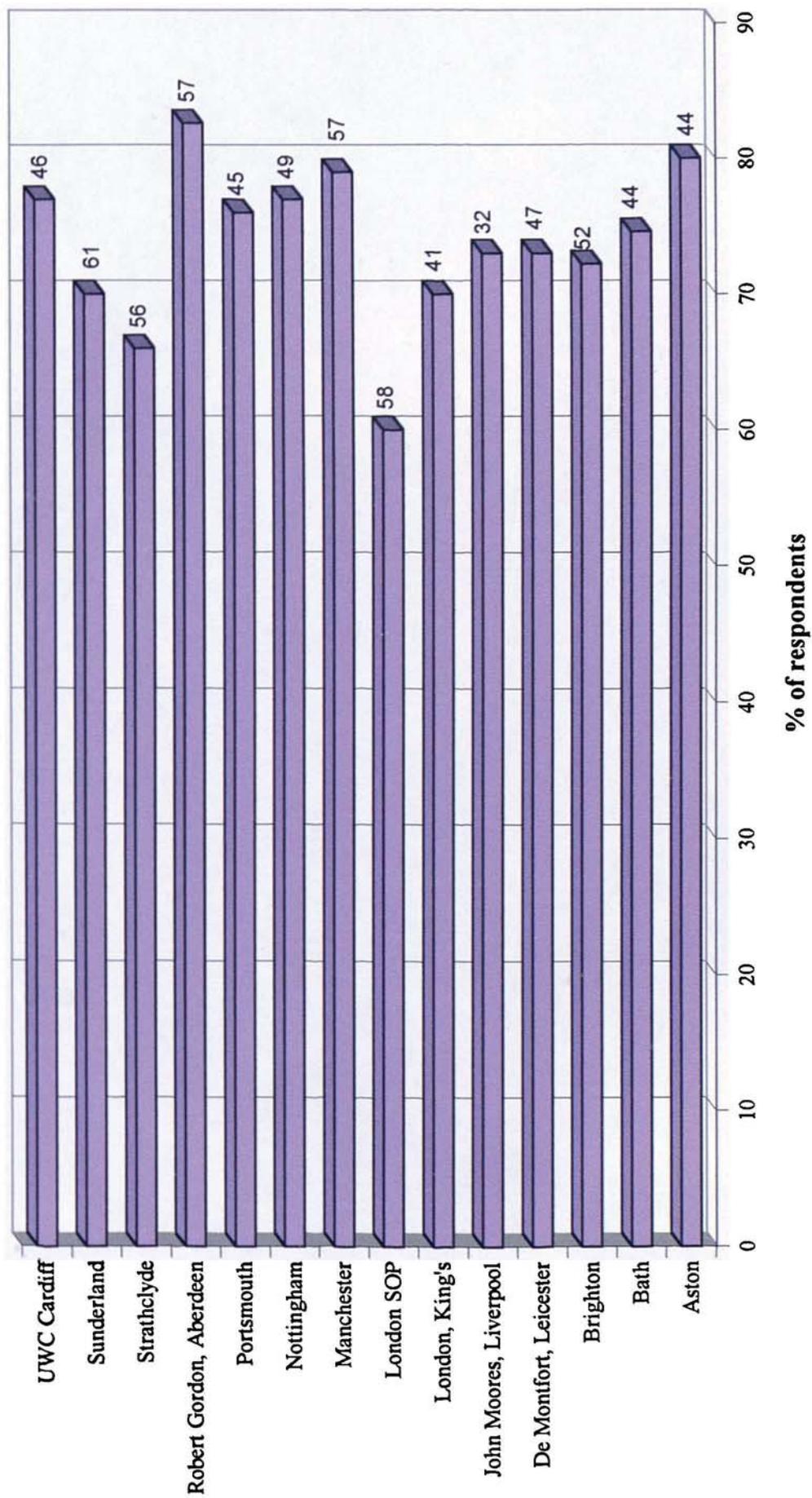
The percentages of respondents training in a full year in community and hospital pharmacy matches the proportion of all pre-registration trainees in the 1992-93 training year in these two branches; 59% community and 38% hospital (159). The 'other' section represents respondents who spent either a 6-month period in a school of pharmacy or with the National Pharmaceutical Association (NPA).

4.3.3 School of pharmacy of respondents

Q2. 'Which school of pharmacy did you attend?'

The percentage and numbers of respondents from each school of pharmacy for the study is shown in Figure 4.1. The percentage of respondents for each school is calculated from the total number of pharmacy students that year in the address list. The total number of students for each school was obtained from a numbered code specific to each school which had been printed for each student on the address labels supplied by the RPSGB. The numbers at the end of each histogram bar in Figure 4.1 represent the actual numbers of respondents. There were only six trainees from Queen's Belfast training in England, Scotland and Wales and all responded, but have not been included in Figure 4.1. There were no respondents from Bradford University as explained in the methodology.

Figure 4.1: Percentage of respondents from each school of pharmacy (actual number of respondents at the end of each histogram bar)



4.3.3.1 Representation of respondents from each school

A comparison of the total number of trainees from each school of pharmacy who had completed undergraduate pharmacy study in 1992 with the number of respondents to the questionnaire from each of those schools will help determine if all the schools are well represented. The representation can be further examined by comparison of numbers based on the branch of pre-registration training.

The results in Table 4.2 shows;

a) First row

The total numbers of trainees from each school of pharmacy who completed pharmacy study in 1992 and the branch of pharmacy in which they were undertaking their pre-registration training. This was determined by analysing the whole address list used to send the questionnaire, which during the pre-registration training, is that of the work place. The address therefore included the name of the institution of training. A code number on each trainee's address label related to the school of pharmacy attended. It was not possible to identify the exact nature of any split training schemes, other than placing them in the branch of current training. If there was any ambiguity in an address, the individual was placed in the 'other' section.

b) Second row

This represents the numbers of **respondents to the survey** from each school of pharmacy and the branch of pharmacy they were undertaking their training in. This was obtained by crosstabulation of the two variables in the questionnaire.

The results in Table 4.2 are shown graphically in Figure 4.2 and Figure 4.3 for the number of respondents to the survey and total number of trainees on the address list undertaking their training in community and hospital pharmacy respectively.

Table 4.2 and Figure 4.2 and 4.3 shows that there were respondents from all schools of pharmacy (except Belfast and Bradford) in the two major branches of pre-registration training. In addition, there was a response rate of between 60 to 86% from each of the schools of pharmacy. The mean response rate was 74%. It is therefore fair to say that this study will have the views of a majority of trainees representing all but two schools.

Table 4.2: Total numbers of students and number of respondents in each school of pharmacy based on branch of pre-registration training

Key: First row - Total number (T) Second row - Number of respondents (R)

School of Pharmacy		Community	Hospital	Other
Aston University, Birmingham	T	41	12	2
	R	33	10	1
Bath University, Bath	T	25	31	3
	R	18	21	5
Brighton University, Brighton	T	42	28	2
	R	22	28	2
De Montfort University, Leicester	T	41	23	1
	R	25	19	3
John Moores University, Liverpool	T	32	10	1
	R	24	8	0
King's College, London	T	39	17	3
	R	24	14	3
School of Pharmacy, London	T	56	40	0
	R	36	20	2
University of Manchester, Manchester	T	40	28	4
	R	30	19	8
Nottingham University, Nottingham	T	20	41	3
	R	13	29	7
Portsmouth University, Portsmouth	T	36	22	0
	R	28	16	1
Robert Gordon's University Aberdeen	T	47	17	4
	R	40	14	2
Strathclyde University, Glasgow	T	43	35	7
	R	24	23	9
Sunderland University, Sunderland	T	65	20	2
	R	44	14	3
University of Wales, Cardiff	T	26	34	0
	R	17	27	2

Figure 4.2: Total and respondent number from each school of pharmacy (except Bradford and Belfast) undertaking pre-registration training in community pharmacy in 1992-93

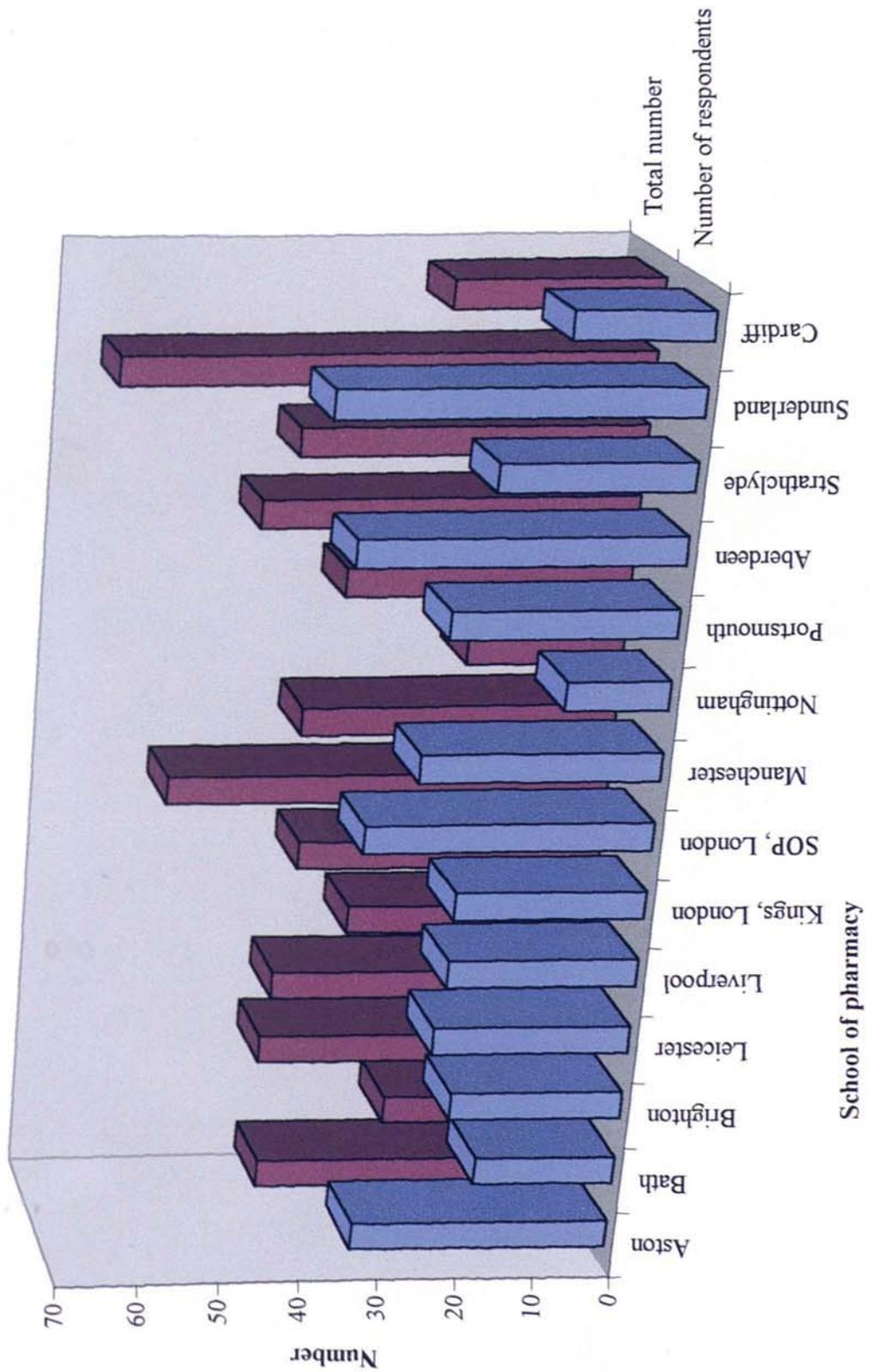
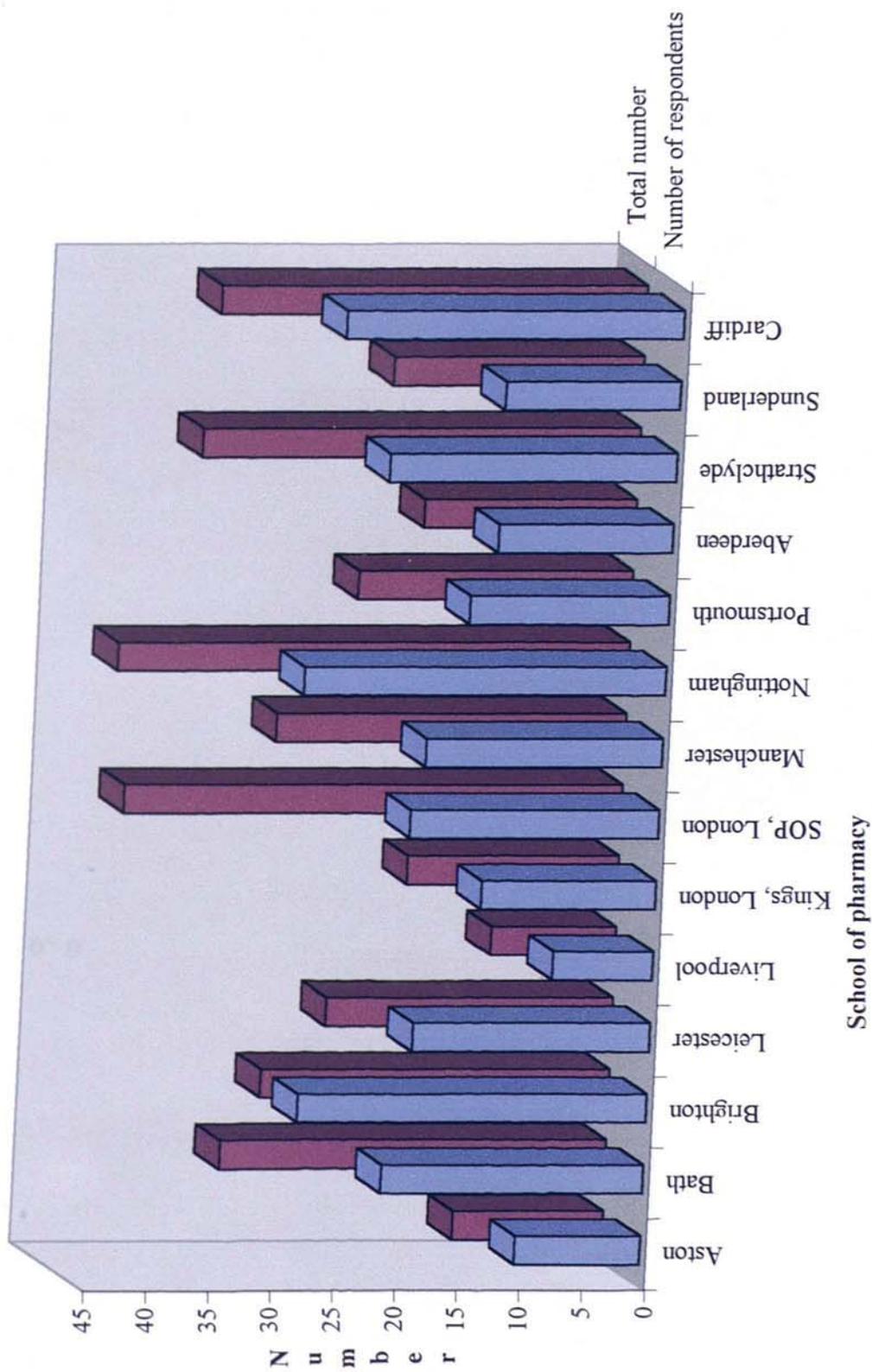


Figure 4.3: Respondent and total number from each school of pharmacy (except Belfast and Bradford) undertaking pre-registration training in hospital pharmacy in 1992-93



4.3.4 Branch of pharmacy of initial interest

Q3. 'When you decided to study pharmacy, in which branch of the profession were you most interested in working?'

Table 4.3 shows the number and percentage of respondents based on the branch of pharmacy they were most interested in future work at the time of choosing to study pharmacy.

Table 4.3: The number and percentage of respondents and the branch of pharmacy of most interest for working in the future when choosing to study pharmacy (n=692)

Branch of pharmacy	Number (n=692)	% of respondents
Community pharmacy	381	55
Hospital	190	28
Industry	67	10
Research	32	5
Other	22	2

A crosstabulation of branch of training and branch of interest between respondents in Table 4.1 and Table 4.3 shows that 74% of the respondents who were interested in working in community pharmacy before they started studying pharmacy undertook a full year of pre-registration training in this branch. Similarly, 68% of respondents initially interested in hospital pharmacy undertook a full year of training in this branch. However, of those respondents initially interested in working in industry, 40% and 28% undertook a full year of pre-registration training in the community and hospital sector respectively. Only 31% of respondents who were initially interested in industry at the time they chose to study pharmacy pursued a split training which included 6 months in industry.

SUMMARY POINT -1

The response from the survey for branch of pre-registration training was similar to the total proportions of all trainees in the 1992-3 year. The majority of respondents showing an interest in a branch of future work at the time of deciding pharmacy study eventually entered pre-registration training in that branch.

4.3.5 Gender of respondents

Q17. Are you Male or Female?

The results in Table 4.4 show the number and proportion of male and female respondents in the study.

Table 4.4: The number and percentage of male and female respondents (n=695).

Sex	Percentage of respondents (n=695)
Male	36% (n=248)
Female	64% (n=447)

The respondent gender proportion was similar to that of the whole study population i.e. all those sent a questionnaire, represented by 39% male and 61% female. This was determined by counting all the males and females from the address labels used for the survey.

4.3.6 Ethnic origin of respondents

Q16. How would you describe your ethnic origin?

The percentage and numbers of male, female and overall representation of different ethnic respondents for the study is shown in Table 4.5.

Table 4.5: The percentage and number of male, female and total respondents from each ethnic background.

Ethnic background	Male	Female	Total
White	32% n=156	68% n=333	70.5% n=489
Indian	43% n=46	57% n=60	15% n=106
Chinese	45% n=17	55% n=21	5.5% n=38
Pakistani	50% n=15	50% n=15	4% n=30
Black African	40% n=4	60% n=6	1.5% n=10
Bangladeshi	40% n=2	60% n=3	1% n=5
Black Caribbean	50% n=1	50% n=1	0.5% n=2
Other	46% n=6	54% n=7	2% n=15

Most of the ethnic groups clearly show a predominance of females studying pharmacy. These findings will be further analysed in the discussion.

4.3.7 Factors influencing decision to study pharmacy

Q4. 'Please state how important the following factors were in your decision to study pharmacy'.

The question listed seven factors which the author considered might influence people to study pharmacy. One of the factors was based on the fact that A-level or Higher level Chemistry is a compulsory requirement for pharmacy study and many schools require a minimum B-grade achievement in this subject. Three of the factors included well-known aspects of the nature of work of a pharmacist. Two factors were based on the role family or school career sessions/advisers have in influencing a student to select pharmacy. The final factor is based on students entering pharmacy study as they have been unable to enter another medical-based course. Table 4.6 shows the percentage of respondents and level of importance response selected.

Table 4.6: Level of importance attached by respondents to factors influencing the decision to study pharmacy.

Factors	% of respondents		
	Of little or no Importance	Importance unknown	Of some or great importance
Desire to provide health care by being an expert on drugs and their use	9	10	81
Liked or good at chemistry in school	19	9	72
Desire to become an adviser to the public about health matters	16	17	67
Desire to be a professional and own a business	36	22	42
Influenced by family or friends	47	13	40
Influenced by careers day, careers officer or teacher	72	11	17
Unable to get into another medical-based profession	86	5	9

There is a highly significant difference ($p < 0.005$) between the number of respondents who found the factor 'desire to be involved in the provision of health care as an expert on drug knowledge and use' of some or great importance in influencing pharmacy study and the number who considered it little or not important. The interest or ability in Chemistry at school and the desire to advise the public on health issues were also regarded as important influences by a clear majority of respondents.

SUMMARY POINT - 2

The percentages of female respondents are higher for all ethnic backgrounds except Pakistani and Black-Caribbean respondents which were equal to the male proportions. A fundamental role of a pharmacist is to provide health care as an expert in drug knowledge and drug use. This role was seen to be the most important factor in influencing the decision of the respondents to study pharmacy.

The following sections (Question 5 and 6) ascertain opinion on usefulness and time allocation of the majority of topics in the three-year pharmacy course. These topics were selected by detailed analysis of the 1992 syllabi of all schools of pharmacy (21), and through validation in the pilot study. The major subject areas and their average contribution to the course have been discussed in Chapter One. The results from all schools of pharmacy have been combined for opinion on topic usefulness and content as there was little difference in opinion between schools of pharmacy. This minimal difference between schools is shown and discussed later.

4.3.8 Usefulness of topics taught in the pharmacy undergraduate syllabus

Q5. *'Please state how useful you think the topics listed will be with respect to providing you with the knowledge necessary to work effectively during your pre-registration year'.*

The results in Table 4.7 show the respondents' opinions on usefulness of taught topics for fulfilling knowledge requirements to work effectively.

Table 4.7: Respondents' opinions on level of usefulness of taught topics in order to fulfil educational requirements to work effectively.

Topics	Percentage of respondents	
	Of some or great use	Of little or no use
PHARMACY PRACTICE		
Clinical pharmacy	98	0.7
Law and Ethics	96	1
Dispensing practicals	96	2
Responding to symptoms	94	3
Communication studies	87	6
Social and behavioural studies	65	15
PHARMACEUTICS		
Bioavailability	87	6
Drug delivery	85	7
Pharmacokinetics	84	8
Formulation	83	8
Quality assurance	66	20
PHARMACOLOGY		
Pharmacology	98	0.1
Physiology	97	1
PHARMACEUTICAL CHEMISTRY		
Biochemistry	68	18
Analytical chemistry	48	38
Organic chemistry	38	49
Stereochemistry	25	61
Inorganic chemistry	20	58
MICROBIOLOGY		
Chemotherapy	81	10
Immunology	69	16
Pharmaceutical microbiology	65	18
Aseptics	63	26

4.3.9 Extent of teaching of topics in the pharmacy undergraduate syllabus

Q6. 'Please state whether the total number of hours taught for each of these subjects should be more or less than at present.'

The results in Table 4.8 show the response highlighting the extent to which allocation of teaching time of the same topics should be altered.

Table 4.8: Percentage of respondents highlighting the extent to which the allocation of teaching time should be altered for the topics.

Topics	Percentage of respondents		
	A little or a lot less	Just right	A little or a lot more
PHARMACY PRACTICE			
Responding to symptoms	2	22	76
Clinical pharmacy	2	29	69
Communication studies	9	34	57
Dispensing practicals	4	52	44
Social and behavioural studies	19	37	44
Law and Ethics	7	65	28
PHARMACEUTICS			
Drug delivery	7	62	31
Bioavailability	6	65	29
Pharmacokinetics	11	61	28
Formulation	15	67	18
Quality assurance	26	58	16
PHARMACOLOGY			
Pharmacology	2	58	40
Physiology	4	58	38
PHARMACEUTICAL CHEMISTRY			
Biochemistry	20	56	24
Analytical chemistry	37	54	9
Organic chemistry	55	41	4
Inorganic chemistry	50	46	4
Stereochemistry	50	47	3
MICROBIOLOGY			
Chemotherapy	8	47	45
Immunology	14	55	31
Aseptics	19	58	23
Pharmaceutical microbiology	21	65	14

(a) Pharmacy Practice

A significant difference is observed between the number of respondents who found all the topics within this subject area to be of some or great use and the number who found them to be of little or no use. A significant difference is also observed between number of respondents who wanted an increase in time allocation for the topics 'Responding to Symptoms' and 'Clinical Pharmacy' and the number who felt it was sufficient or should be reduced. A majority of respondents also chose 'Communication studies' and 'Social and behavioural studies' as requiring greater allocation of teaching time. Of all the topics, these four were the only ones considered as requiring an increased allocation of teaching time.

A further analysis shows that 71% of all respondents selected clinical pharmacy as being of some or great use and its time allocation to be increased. A majority of respondents felt the time allocation of 'Dispensing Practicals' (52%) and 'Law and Ethics' (65%) was sufficient.

(b) Pharmaceutics

A majority of respondents indicated that all the topics within this subject area were useful for their practice requirements. However, time allocated for all the topics within Pharmaceutics was considered to be sufficient by a majority of respondents.

(c) Pharmacology

There is highly significant difference ($p < 0.005$) between the number of respondents who considered these topics to be useful compared to those who did not. The allocation of teaching time was considered sufficient by a majority of respondents.

(d) Pharmaceutical Chemistry

Only in the topics of 'Biochemistry' and 'Analytical Chemistry' were there a majority who considered these subjects useful. The time allocated to these two topics was considered sufficient by a majority. The other three topics, 'Organic Chemistry', 'Inorganic Chemistry' and 'Stereochemistry' were selected by a majority of respondents as being of little or no use and requiring a reduction in the allocation of teaching time. Of all the topics, these three were the only ones that attracted this response.

(e) Microbiology

The responses were very similar to those for Pharmaceuticals. All the topics in this area were considered by a majority of respondents to be useful and the allocation of time was sufficient.

SUMMARY POINT – 3

In general the majority of topics taught in the three-year course were perceived to be useful and a relevant knowledge base for practice. However, three topics within Pharmaceutical Chemistry were not considered useful. Four topics, all in the area of Pharmacy Practice, were considered as requiring an increased allocation of teaching time.

4.3.10 Concept of specialisation in the course

The results on topic usefulness and allocation of time have been further analysed by comparing this data with the branch of training of respondents. The comparison was made of respondents undertaking a full year of training in community and hospital pharmacy as they represent the two largest groups. A comparison of this nature could provide evidence of specific topics seen to be much more useful or requiring increased allocation of teaching time in one branch and not the other. Any topics showing a strong difference can then be considered for teaching as a specialisation option in the final year. If however, there is little or no difference in opinion between branches, than it can be assumed that they have a universal appeal irrespective of branch of work and should remain in the core course. The comparison between the two branches for usefulness and teaching time allocation is shown in Figure 4.4 and Figure 4.5 and will be discussed later.

Figure 4.4: The percentage of community and hospital-based respondents selecting individual topics as useful in fulfilling knowledge requirements for work

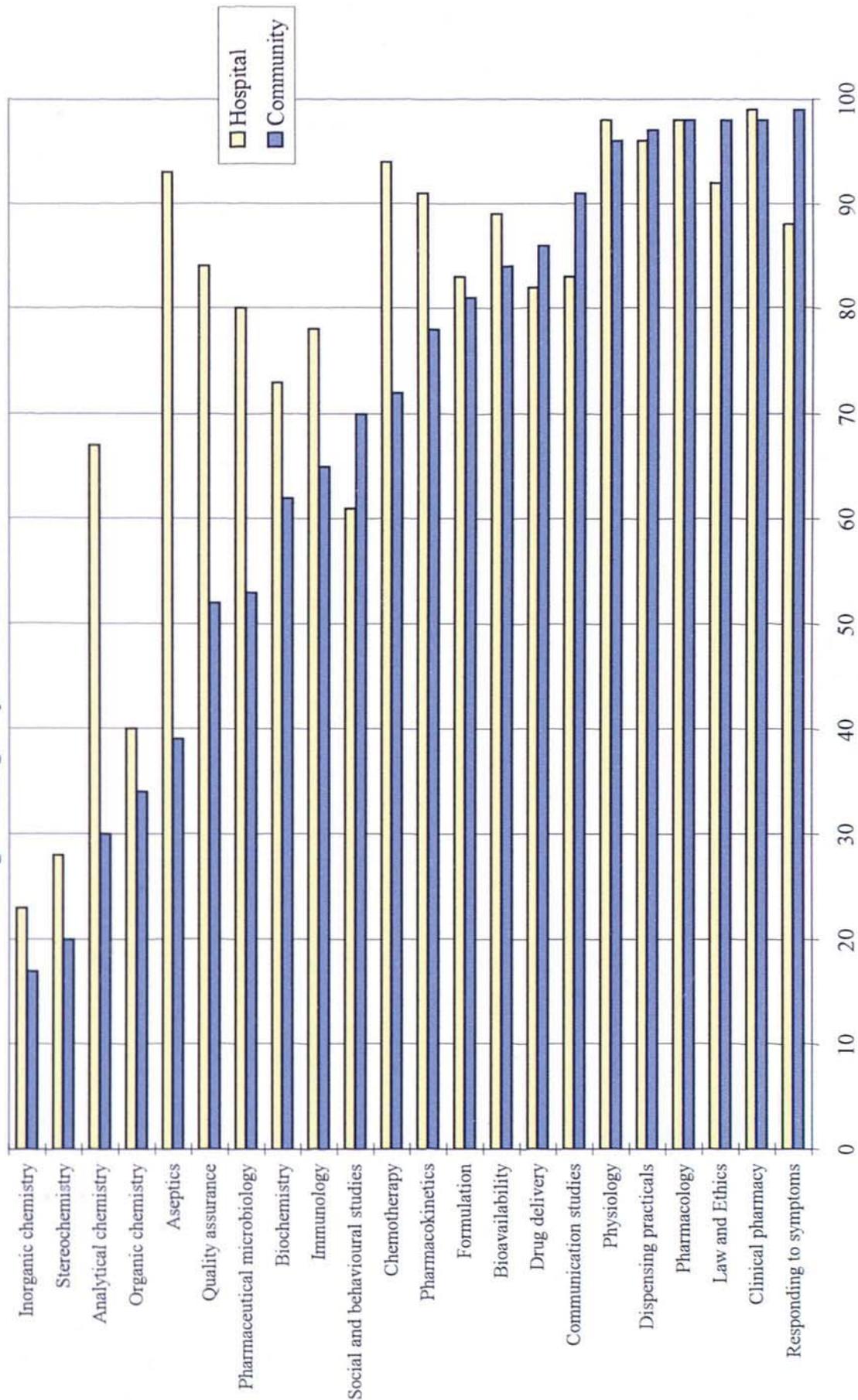
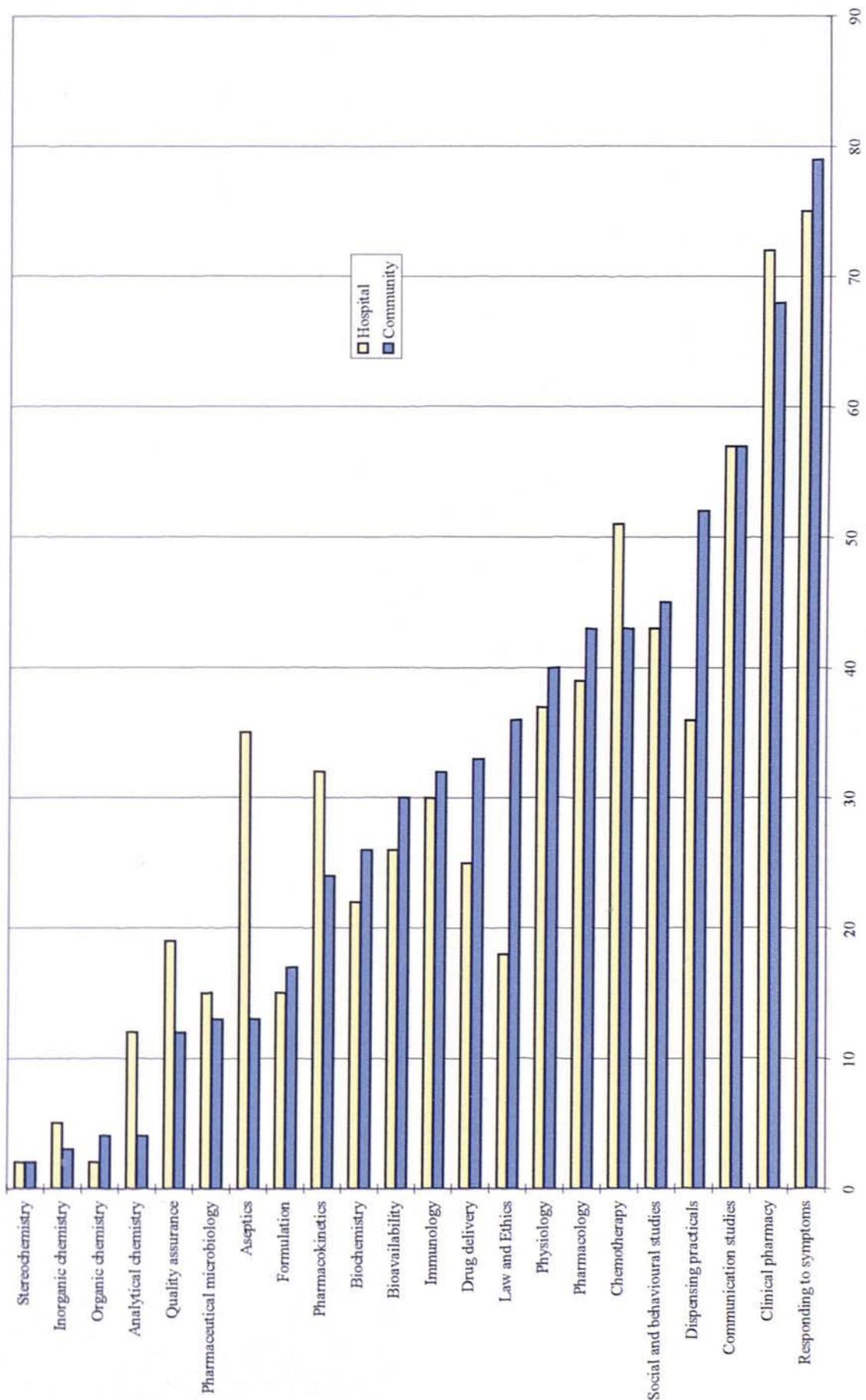


Figure 4.5: The percentage of community and hospital-based respondents selecting the topics for increased allocation of teaching time



4.3.11 Introduction of new topics in the pharmacy course

Q7. *'The following subjects are taught in various schools across the world and maybe to some extent in the UK. Please state how useful you feel their inclusion in the undergraduate course would be'.*

In 1986, the Nuffield Report stated that topics which would improve the pharmacists' capacity to perform their advisory role in the community and their clinical role in hospitals should be taught in the undergraduate course. It further stated that the behavioural sciences should be included within this area and as a specialist option, a study of management science (16). The course had not been officially extended at the time of this study and this question ascertained the value of inclusion of newer topics in the three-year course. Topics in the area of clinical pharmacy and the social and behavioural studies which have a strong foundation in various schools of pharmacy in other parts the world, particularly the USA and Scandinavian countries were selected (30, 39, 160). Table 4.9 shows the percentage of respondents who undertook their training in community and hospital pharmacy who found the inclusion of this selection of topics as being useful in a three-year UK course.

Table 4.9: Percentage of community and hospital respondents who value the inclusion of topics in the course taught in schools outside the UK.

Topics	Community	Hospital
Drug abuse and addiction, social and clinical aspects.	97	97
Study of providing home health care for homebound patients e.g. parenteral therapy, monitoring compliance, mobility aids and advice	80	87
Study of food and dietary habits.	85	79
Clinical pharmacy by integration in a hospital environment.	71	90
Information technology and computer literacy relevant to computer use in pharmacy	79	75
Environmental issues concerning health.	81	73
Management and organisation of business and employees.	83	64
Study of ethnicity and ethnic diseases.	61	64
Study the management and understanding of social problems in the community	57	56

A majority of respondents within each branch of training indicated the inclusion of all the topics listed as useful. Since this study was conducted, the four-year extended course was implemented and these will be discussed with regard to their value in an extended course.

For each branch, there was a significant difference between the number of respondents who found inclusion of each topic useful compared to the number who did not except;

- a) hospital respondents to 'management and organisation of business and employees'.
- b) respondents from both branches to 'study of ethnicity and ethnic diseases'.
- c) respondents from both branches to 'study the management and understanding of social problems in the community'.

The results showed strong similarity between the two branches in opinion on usefulness for most topics. The topics where there was a difference can be regarded as those where trainees from one branch would receive greater benefit if that topic was taught. For example, 83% of community compared to 64% of hospital-based respondents felt the teaching of managerial and organisational skills in business and personnel affairs would be a useful inclusion.

SUMMARY POINT - 4

The topics related to the clinical, technological and extended role of a pharmacist are valued as useful for inclusion in a course by trainees from both community and hospital pharmacy. The value of inclusion of a socially-oriented topic attracted the lowest response. The new four-year course provides an opportunity to include some of these topics in the syllabus.

4.3.12 Learning methods

Q11. 'The following is a list of learning methods used in various undergraduate courses. Which of these methods were used in your course and if so, how useful did you find them in improving your ability to learn and understand syllabus topics.'

This was a two-part question where respondents had to first state whether a learning method had been used, and if so, then indicate the level of usefulness of the method in assimilating the topic taught. Table 4.10 shows the percentage of respondents and level of usefulness of each learning method based on the respondents who indicated that they had used that method. All the methods of learning had been used by all respondents except computer-aided learning. A total of 30% of respondents stated that they had not used this method.

Table 4.10: Respondents' opinions on level of usefulness of various learning methods used in pharmacy education at each school.

Learning method	% of respondents		
	Of no or little use	Of some use	Very useful
Problem solving e.g. case studies	2	15	80
Lectures	1	27	66
Tutorials or seminars	5	29	62
Student presentations	11	40	41
Practicals	7	46	39
Computer-aided learning	38	40	16

(The responses for the 'not sure' option have been omitted.)

The use of problem-solving methods of learning was selected by the largest number of respondents as being very useful. The merits of problem-based learning in vocational courses have been discussed in Chapter One and will be considered further later in this chapter. There is a significant difference between the number of respondents who found this format very useful and those who found it of some, little or no use. A greater percentage of respondents found the lecture format as a more useful learning method than they did seminars or tutorials.

SUMMARY POINT – 5

Almost a third of all respondents had not been exposed to computer-aided learning at their school of pharmacy. The use of problem-solving methods of learning were clearly found most useful in assimilating course topics.

4.3.13 Level of agreement to pre-determined statements on the undergraduate course

Q12. 'To what extent do you agree or disagree with these statements that refer to the undergraduate course and pharmaceutical education.'

The statements selected were derived from literature relating to pharmacy education. These include the views put forward by pharmacists to the Nuffield Committee of Inquiry and the accreditation guidelines set by the RPSGB for the undergraduate course, two areas discussed in Chapter One. The Nuffield Report stated that proposals had been received for an increase in the vocational content of the course. Criticism had been made that the course did not equip students to become practising pharmacists and were without the ability to communicate with patients and fellow health professionals. It was proposed to the Committee that the course needed to increase the content of clinical pharmacy and topics related to the actual practice of pharmacy (16).

The 1992-93 RPSGB course accreditation guidelines emphasised that the Council were concerned with the breadth of course content in a pharmacy degree. The guidelines stated that it was essential that the student acquires a sufficient understanding and comprehensive knowledge and expertise in all aspects of the preparation, distribution, action and uses of drugs and medicines, both human and veterinary (19).

This implies that the course should provide sufficient knowledge to create an awareness of the role of the pharmacist in all branches of the profession. Two of the Council's practice-based objectives for achievement within the curriculum in the 1992 accreditation guidelines were (19);

- a) have a basic understanding of medicines' formulation for which this would be regarded as the normal means of provision.
- b) have sufficient academic knowledge to underpin a role in advising patients and other health care professionals about medicines and their usage.

Table 4.11 shows the statements derived from these sources and level of agreement response.

Table 4.11: The percentage of respondents who agree or disagree with statements relating to the undergraduate pharmacy course.

Statements	Percentage of respondents	
	Disagree or strongly disagree	Agree or strongly agree
The undergraduate syllabus in general bears little relevance to the knowledge I require in practice.	57	30
The undergraduate course has enabled me to develop my communicative skills.	28	54
The undergraduate course does not teach about social issues relevant to pharmacy.	29	46
The undergraduate course has developed my awareness of the pharmacist's role in the three main branches of the profession.	28	61
At the completion of the undergraduate course I do not feel confident enough to recommend appropriate use of medication to achieve optimal therapeutic outcomes.	28	62
More emphasis should be placed on teaching clinical and practice subjects.	5	88
I am confident I have working knowledge of drug formulation with respect to methods of delivery to the body.	15	68

Based on branch of training, 57% community, 57% hospital and 61% of split-scheme respondents disagreed that the pharmacy syllabus in general bore little relevance to knowledge required in practice.

Just over half the respondents (54%) agreed that the undergraduate course had developed their communication skills but 46% of respondents agreed that the course did not teach social issues relevant to pharmacy. The teaching of social and behavioural studies was one of the few topics requiring an increased allocation in teaching time as shown on p.115.

A further analysis shows that 59% of community and 66% of hospital-based trainees did not feel confident enough to recommend appropriate medication for optimum therapeutic outcomes after completing the undergraduate course. However, 72% of community and 61% of hospital-based trainees agreed they were confident in having working knowledge of drug formulation with respect to methods of drug delivery to the body.

There is a highly significant difference ($p < 0.005$) between the number of respondents who agreed/strongly agreed with the statement 'more emphasis should be placed on teaching clinical and practice subjects' compared to the number who disagreed/strongly disagreed. Of all the respondents, 50% strongly agreed to this statement. The agreement to this statement was irrespective of the branch of pre-registration training; 88% of community, 88% of hospital and 83% of split-scheme respondents agreed/strongly agreed with this statement.

4.3.14 Teaching of topics classified as ‘must know’ in the pre-registration examination syllabus in the undergraduate course.

Q13. ‘Which of these subjects below, listed under the ‘must know’ category in the pre-registration examination syllabus were taught in your degree course?’

The survey participants were the first group to formally sit the pre-registration examination at the end of their training in the summer of 1993. As discussed in Chapter Two, the RPSGB pre-registration training manual contained a detailed syllabus of subject areas relevant to the examination in 1992.

The subjects were placed in three categories, ‘must know’, ‘should know’ and ‘could know’ which reflected the priority of weighting of marks in the examination (103). The acquisition of knowledge of ‘must know’ topics was considered essential for success in the pre-registration examination. Some of the subjects or subject areas classed as "must know" were listed in the question and the respondent asked the extent to which they had been taught them in the undergraduate course.

The results are shown in Table 4.12 on the next page. Any option attracting less than 5% of respondents has been excluded for simplicity of analysis.

4.3.14.1 Topics representing a negative response

The subjects that attracted considerable response of ‘not taught’ or ‘not sure if taught’ can be classed as following ;

- a) Legal and structural topics relevant to a work environment;
 - Consumer Act
 - Data Protection Act
 - Health and Safety Act
 - The National Health Service

4.3.14.2 Topics representing a positive response

The majority response for all the other ‘must know’ topics was that they had been taught and there was confidence that knowledge could be applied in practice. There were a few topics where respondents did not feel sure of their ability to apply the taught knowledge in practice yet. As this survey was conducted in the early stage of pre-registration training, respondents at this stage may still have been uncertain of their ability.

Table 4.12: Respondents' opinions on the extent of teaching of topics listed as 'must know' in the pre-registration manual

	Percentage of respondents				
	Not taught	Taught but did not understand	Not sure if I was taught	Taught but not sure if I'll be able to apply in practice	Taught and I'm sure I will be able to apply in practice
Sale and supply of medicines and poisons				44	53
Code of Ethics				40	53
Health and safety and safe systems at work	21		23	28	26
Consumer Protection Act	38		27	21	12
Data Protection Act	36		19	22	20
The National Health Service in Great Britain, its role and structure	13	13	9	43	22
The basis of responding to symptoms including the major categories of symptoms and the appropriate responses by a pharmacist				36	57
Reading and interpreting prescriptions				10	82
Drug action, absorption, distribution, metabolism and elimination				41	57
Adverse drug reactions, side effects, interactions and contra-indications				44	51
The use of reference books and other information sources				14	80
Labelling				9	89
Advice to patients and members of the public on medication and use				31	60
Stability and storage of medicinal products			11	31	53
Good dispensing practice				18	77

4.3.15 Factors influencing choice of pre-registration training branch or venue

Q14. 'Which of the following factors were relevant to you when you were choosing your pre-registration training? Please rank the factors you have chosen in order of importance with 1 being the most important down to the least important.'

The question asked respondents to rank in order of importance pre-determined factors as an influence upon the choice of pre-registration training. Table 4.13 shows each factor and the percentage of respondents who selected it as first, second, third and fourth in order of importance in choosing their pre-registration training location. The percentages for each factor are based on the total number (n) who chose and ranked that factor.

Table 4.13: Percentage of respondents selecting each factor as first, second, third and fourth in order of importance in influencing choice of training.

Factors	n	1st	2nd	3rd	4th
Branch of pharmacy I want to work in after training	531	43	19	24	10
Training offered was very good	595	38	37	17	5
Unable to get into first choice of training	148	30	17	16	7
Offered best opportunity to apply knowledge into practice	450	23	29	24	16
Qualify as pharmacist before doing something else	182	19	10	15	21
Only prospect available	118	19	13	11	11
To be near family/friends/partner	324	13	15	18	22
Good career prospects with same employer afterwards	356	12	22	31	22
Familiar with employer due to previous work with them	233	6	13	18	24
Recruitment opportunity by employer at school	169	4	8	8	22

The factor 'Training offered was very good' was selected by the largest number of respondents (n=595) as being a relevant factor in choosing a training location. The factor 'Branch of pharmacy I want to work in after training' was selected by the largest percentage of respondents (43%) as the most important factor of influence. The factor 'Recruitment opportunity by employer at school of pharmacy' was selected by the smallest percentage of respondents (4%) as the most important influence. The results have been discussed later using rank order analysis, described on p.98.

4.3.16 Perceptions and expectations of the pre-registration year just commenced

Q15. 'To what extent do you agree or disagree with the following statements that refer to the pre-registration year'.

All but two of the statements have been derived from literature relevant to the training year. The statement 'the pre-registration year will not equip me enough to organise and manage employees' was added because management was not included as a criteria for training either in the 1992 manual or in the pre-registration examination syllabus (103). However, it was an aspect that most pharmacists would have involvement in and responsibility over, immediately after registration. The other statement on introducing a mandatory education period in the training year was added to determine attitude of these future professionals to the concept of mandatory continuing education. The other statements were based on the Nuffield Report on Pharmacy (16), the 1992 training manual (103) and the 1993 RPSGB Byelaws on pre-registration training (100), three areas discussed in Chapter Two. The 1992 training manual indicated that the pre-registration programme intended to take a newly graduated student through a developmental process allowing the trainee to apply knowledge gained through academic studies (103). The Nuffield Committee considered that the pre-registration year should be used to enable the graduate to apply the science learnt in the practical situation of community, hospital or industrial pharmacy. Secondly, it recommended that a registration requirement for training consisting of two six-month periods spent in any two out of community, hospital or industrial pharmacy be made for all trainees. Thirdly, the Committee recommended a further year of supervised experience after training be introduced before sole responsibility could be assumed by a newly-registered pharmacist of a community pharmacy or hospital pharmaceutical development (16). Currently, a pharmacist can work in any branch of the profession and assume sole responsibility immediately after registration. Finally, one of the objectives of training set out in the 1993 RPSGB Byelaws on Pre-registration training was to develop the ability of the trainee to communicate clearly with members of the public and members of allied professions (100). The statements have been derived from these sources.

The responses to these statements is shown in Table 4.14.

Table 4.14: Percentage of respondents who agree or disagree with statements on the pre-registration year

Statements	% of respondents	
	Disagree or Strongly Disagree	Agree or Strongly agree
The pre-registration year will not give me the opportunity to apply the knowledge from the undergraduate course into practice	78	12
At the completion of my pre-registration year I feel confident that I will be able to work as a pharmacist in any branch of the profession	63	25
The pre-registration year will not equip me enough to organise and manage employees	45	33
The pre-registration year should be split to allow me to gain an insight and experience in two branches of the profession	25	57
It should become mandatory for pre-registration students to attend a minimum number of pharmacy continuing education study days or seminars	13	72
At the completion of my pre-registration training, I should be capable of offering advice on medications and their use to patients and members of the public	2	94

There is a significant difference between number of respondents who disagreed/strongly disagreed that they would not have an opportunity to apply the knowledge from the undergraduate course compared to those who agreed/strongly agreed. It is assumed that the first few weeks of training had given respondents enough of an insight to offer this response. Only 25% of community and 25% of hospital-based respondents agreed that they were confident about working in another branch immediately after registration.

Only 23% of hospital-based respondents felt the year would equip them to organise and manage employees compared to 63% of the community-based respondents. A majority of 57% of respondents agreed that the training year should be split to allow a working insight in two branches of the profession. There was little difference in this opinion between community (58%) and hospital-based respondents (50%).

There is a significant difference between the number of respondents who agreed/strongly agreed that it should be **mandatory** to attend a minimum number of pharmacy continuous education study days or seminars during the training year and the number who disagreed/strongly disagreed. There was absolutely no difference in this opinion between community and hospital-based trainees with 73% of each group supporting mandatory continuing education.

There is a highly significant difference ($p < 0.005$) between number of respondents who strongly agreed/agreed (94%) compared to those who strongly disagreed/disagreed that, on completion of training, they would be capable of offering advice on medications and their use to patients and members of the public. There was no difference in this opinion between branches as 96% of community and 94% of hospital-based respondents agreed.

SUMMARY POINT – 6

There was a low level of confidence expressed in having the ability to work in any branch of pharmacy after completion of the training year. A majority agreed that the training year should be split to provide experience in two branches of pharmacy. There was a strong agreement for the mandatory introduction of continuing education during the pre-registration training year.

4.4 EVALUATION AND DISCUSSION

The survey was initially designed to ascertain the responses of trainees from all schools of pharmacy including Bradford. The Bradford sandwich students would have been participating in the second six-month period of their training in September 1992. However, the address list provided by the RPSGB did not include any Bradford fourth-year students or graduates from Queens University, Belfast who undertook their training in N.Ireland. The trainees in this study had finished undergraduate education a few months previously, and were in the first few weeks of training. It was envisaged that their memory of the course would still be strong, and as they had successfully completed their study, their opinions would be refreshingly honest and without restraint.

4.4.1 Response rate

The percentage of respondents training in community, hospital and split schemes was highly representative of the proportions in the total population of trainees in the 1992-93 training year. A total of 59% and 38% spent the full year training in community and hospital practice respectively in 1992-93 (159). The survey showed a response from 55% community and 38% hospital-based trainees. In addition, all but two of the schools of pharmacy were represented by a majority of trainee respondents. The results in Table 4.2 shows that schools of pharmacy like Aston, Liverpool, Aberdeen and Sunderland had a much higher predominance of students who undertook pre-registration training in community pharmacy. Conversely, the schools at Bath, Nottingham and Cardiff had a higher predominance of students undertaking their training in hospital pharmacy.

There may be several reasons for these differences;

- a) the pharmacy practice staff at the school have a greater interest in and thereby influence students to pursue a career in one of the two branches. For example, this may arise particularly if a school has a large number of hospital teacher-practitioners.
- b) the hospital pre-registration employers favour recruitment of students from the three schools mentioned.
- c) the nature of teaching of pharmacy practice is biased towards practice in one branch and not the other.

4.4.2 Gender

The proportion of women undertaking their training (61%) and responding to the survey (64%) was much higher than males. In 1992, the proportion of women on the register of pharmaceutical chemists represented 44.3%, which showed a slow but continuous rise since 1984 (159). This trend is likely to continue as shown by the proportion of trainees in this survey.

4.4.3 Ethnic origin

This study shows that the proportion of Indian, Chinese, Bangladeshi women respondents were higher than their male counterparts. Although this is indicative of the larger proportion of women who studied pharmacy in this survey, it does show that more Asian women are now pursuing a career in pharmacy compared to the proportions found in a report in 1990 by the Commission for Racial Equality. In this report the CRE found that only 16.7% of the Asian pharmacists who qualified in 1984 were women (161). Work trends within ethnic minorities and gender is further discussed in Chapter Nine.

4.4.4 Factors influencing decision to study pharmacy

This study shows the desire to provide health care as an expert on drugs and their use was regarded as the important reason for studying pharmacy. This factor corresponds to the very nature of work most pharmacists would be involved in. However, the influence of chemistry is also very strong. The trainee's ability or interest in the subject of chemistry at school was selected as a factor of importance by 72% of respondents. This suggests that during research for the most appropriate future career, many school students who enjoy or are able at chemistry, will find pharmacy to be most suitable. All schools of pharmacy in the UK indicate A-level chemistry as a compulsory entry requirement. For example, the student prospectus at Aston University indicates that providing applicants are judged by admissions staff to be suitably equipped for the degree course then chemistry plus either biology, maths or physics is usually acceptable alongside a third subject of an unscientific nature (162).

Of the respondents who chose community pharmacy as the branch of most future work interest when deciding to study pharmacy, 72% attached importance to becoming an adviser to the public about health care as a reason for studying pharmacy. There is however some gender difference in the importance of this factor. Only 54% of males attached importance to this advisory role factor compared to a 74% of females. It suggests that most females see the provision of advice as a primary duty of a pharmacist which they would be keen to undertake. The use of the Q-technique in a 1994 USA study examining attitudes of entering pharmacy students towards their profession showed that these students were looking for stable profession that involved science and gave them the opportunity to help people through the provision of drug information and counselling (68). The present study supports the findings of USA study in 1994.

Only 17% of respondents attached importance to the influence of career guidance at school for choosing to study pharmacy which is a poor reflection on schools. It seems that the influence of career sessions at school have not improved since the 1980s. A study in 1984 of pharmacy applicants called for interviews to study pharmacy at Bradford showed that only 16% of the applicants were influenced by local authority careers service, 18% by exhibitions held at schools, 15% by career advisers and 16% by school career conventions (69).

Similarly a 1985 survey of first-year pharmacy students at Manchester University found career conventions at schools provided the first source of pharmacy information to only 9% male and 15% female respondents in the study (70). It also seems that this influence has not improved since the present study in 1992. A study of undergraduates from the Welsh School of Pharmacy in 1993 and 1994 indicated that careers fairs and careers conferences had not proved a particularly effective means of disseminating information. Only 16% of the Welsh students had heard about pharmacy as a career from a careers master at school (163).

A properly trained careers adviser;

- a) can direct young school students to pharmacy by highlighting the benefits of the profession.
- b) clear any misconceptions these young people may have about the role of a pharmacist e.g. tablet counter.
- c) reassure students who may have the perception that the course comprises of chemistry and little else.
- d) identify in young people the many personal qualities expected of a pharmacist.

The role and development of career personnel at school is an area requiring further investigation. Each school of pharmacy could formally liaise with local A-level schools and train their career personnel, or even provide career information on a regular basis. This is currently done by some pharmacy schools, but, mainly on an *ad hoc* basis and usually to only a few schools

One of the elements of pharmacy as a profession is that it can be conducted as a commercial business and retain a professional image, particularly in community pharmacy. This ensures self-employment and independent job security. However, only 42% of all respondents chose this factor of 'owning a business and being a professional' as important in influencing pharmacy study although there was a difference in opinion when respondents were analysed by ethnic origin. Of all the Asian respondents, 53% attached importance to this factor compared to 37% of all White respondents. For the purposes of this study, the Asian respondents are the combined responses of Indian, Pakistani, Bangladeshi and Chinese respondents. There are clearly dangers in grouping individual minority groups together like this. Large cultural differences exist as much between Bangladeshis and Indians, for example, as they do between Indian and Whites (164).

While the small ethnic minority sample size makes this necessary, the results should be interpreted accordingly. In a recent study of reasons for choosing pharmacy between White and ethnic minority pharmacists, 6% of the non-minority pharmacists indicated the prospect of owning their own business as an important reason. In comparison, 20% of the minority pharmacists found this factor important in influencing pharmacy study ($p= 0.00097$) (164).

An explanation identified in the sociological literature for the attraction of business to ethnic minorities is that entrepreneurial success is culture bound i.e. that certain ethnic groups have an innate ability that attracts them to business (165). Pharmacists of Asian origin choose to study pharmacy because there is an added incentive to own a business and therefore have job security. It may be that poor employment prospects can be avoided through seeking a role as an employer rather than an employee, and in the pharmacy through seeking to own a pharmacy. A number of motivators have been identified to explain the trends of small business entrepreneurship within Asian communities. These include the desire for social advancement among the educated, for job creation among the unskilled and for continuation of traditions of small business ownership found in many cultures (166). It has been claimed that Asian-owned pharmacies now make up around 50 per cent of all independent pharmacies in Britain (167).

Of the Asian respondents in the present study, 46% attached some or great importance to the influence of family and friends for choosing pharmacy compared to 33% of White respondents. Based on the author's own experience, this difference may be accounted by the strong cultural influence many Asian parents have in the education and career of young Asian people. The profession of pharmacy is seen by Asian parents as providing independence and life-long security for their children which holds great value in a country where they represent a minority population. There is a strong belief among Asian people who came to the UK as immigrants, that pursuit of educational courses which have high employment rates will strengthen the possibility of their children attaining employment without any discrimination. This is partly confirmed by a study by Brennan and McGeevor, on behalf of the Commission for Racial Equality (CRE) which looked at a 10 per cent sample of all 1982 admissions to polytechnic courses and found that Asians were concentrated in three major areas: electrical and electronic engineering, science and pharmacy, subjects which had high employment rates at the time (168).

At the time of this survey in 1992, as shown by the chronological history of the introduction of the four-year course in Chapter One, it was extremely likely that the pharmacy course was to be extended to four years (54,55,56,57). However, there had been no official confirmation of this extension at the time of the survey. The survey had been designed to assess opinions on usefulness and time allocation of individual topics in the three-year course attended by these trainees with a view to extrapolating the results to provide recommendations for a future extended four-year course. The teaching time allocation of topics could suggest areas of reorganisation to improve provision of pharmacy education. The assessment of usefulness would indicate both the importance and relevance of topics to the requirement of trainees and practising pharmacists which would affect the content.

4.4.5 Usefulness and allocation of teaching time of undergraduate topics

(a) Pharmaceutics, Pharmacology, Microbiology

The results show that all the topics in the subject area of Pharmaceutics, Pharmacology and Microbiology were selected as being useful by a majority in order to fulfil the knowledge required to work effectively. However, the opinions on usefulness cannot be discussed without considering the time that should be devoted to their teaching. The results showed all of the topics in this area were considered sufficient in time allocation by a majority of respondents. The results suggest that these topics are seen as relevant in fulfilling the knowledge required in practice but there is no desire to increase their teaching content or time.

(b) Pharmaceutical Chemistry

Within Pharmaceutical Chemistry however, only 'biochemistry' and 'analytical chemistry' were selected as useful by a majority. The other three topics, 'organic chemistry', 'inorganic chemistry' and 'stereochemistry' were found by a majority to be of little or no use. These three topics represent the basic chemistry mainly taught in the first year. Also, these three topics were chosen by a majority as requiring a reduction in the time allocated to teaching them. Within this subject area, 'biochemistry' was the only topic to attract a strong response of its usefulness. The strength of the negative opinion of these topics within Pharmaceutical Chemistry is sufficient for schools of pharmacy to reconsider the nature of teaching these topics. It would appear that some of the time allocated to these subjects should be given to other useful areas.

The Nuffield Report stated that the greatest potential for pruning in a three-year course lay in the area of chemistry, not because its importance had diminished, but because of all the subjects taught in the undergraduate curriculum, this was the only one that all students experienced in school. For example, basic aliphatic, alicyclic and aromatic chemistry could be reduced (16).

It is also disconcerting to note that the negative opinions on the usefulness or time allocation of most topics within pharmaceutical chemistry was despite the fact that many of these trainees had been influenced to study pharmacy as they had previous ability or interest in chemistry at school. This raises concern about the discrepancy between the importance of chemistry as an entry requirement for pharmacy study and subsequent opinion that topics within this area have little usefulness in fulfilling knowledge required to practice effectively as a pharmacist. This suggests that this area should be reorganised so that it's relevance to pharmacy is much clearer. In addition, there are increasingly small number of scientific chemists within UK schools of pharmacy who are also pharmacists. One possible solution might be to recruit pharmacists from industry, industrial teacher-practitioners, who can relate the teaching of scientific areas, particularly in pharmaceutical chemistry, to drug development and use.

Another solution is to introduce new methods of teaching chemistry. In 1997, a new concept of teaching medicinal chemistry was introduced in a school of pharmacy in Omaha, USA. This concept emphasises the relevance of chemistry to the practice of pharmacy and demands its' inclusion in the therapeutic decision making crucial to the provision of pharmaceutical care. This concept of teaching is called the Structurally Based Therapeutic Evaluation (SBTE) of drugs. Students are still required to identify the chemical/structural basis for the pharmacological action of drugs and to analyse on a molecular level why a drug works but in addition, the unique additional feature of this concept is the inclusion of therapeutic criteria which must be addressed when identifying the action of these drugs. In other words, the chemical structure and action of each drug has to be evaluated in conjunction with the use of the drug in drug therapy decisions in clinical case studies. The chemistry of the drug is therefore interlinked with its use on a patient, patient compliance, current and past patient medical history and possible side effects. This encourages the practical impact of medicinal chemistry on the practice of pharmacy and the use of the drug (169).

(c) Pharmacy Practice

There is little doubt that all the topics in this area are considered useful by the trainees in fulfilling the knowledge required to work effectively. In addition, this was the only subject area in which topics attracted responses for increased teaching time allocation. The topics attracting this response were 'communication studies', 'social and behavioural studies', 'clinical pharmacy' and 'responding to symptoms'. In particular, the latter two topics attracted the strongest response for an increase in time allocation. It is fair to say that they represent the 'newer' topics in the pharmacy syllabus. Those topics traditionally associated with practice such as 'law and ethics' and 'dispensing practicals' although perceived to be very useful, would appear to have adequate time allocated for their teaching. The results clearly show that the trainees feel the course should have a greater emphasis on practice and clinical-based topics.

In 1987, Hepler indicated that the third wave, after science and practice, in American pharmaceutical education involved the clinical movement. This movement would involve a change in emphasis of curricula from the physical and chemical sciences towards the biological and clinical sciences (33). Based on the strength of opinions on clinical pharmacy in this survey would seem to suggest that the comment made by Hepler is reflected by many graduates in this study.

Within pharmacy practice, social and behavioural studies was considered useful by the smallest majority of respondents and attracted the largest percentage expressing a reduction in time allocation. The need to increase the teaching of this area was one of the four reasons given by the RPSGB for proposing an extension to a four-year course in 1992 (57). It is, therefore, an area of undergraduate education that is highly valued by the RPSGB. A reason for these responses may be that at the time of this study, there was either little experience of teaching this area within the UK in the pharmacy context or insufficiently trained staff. If the teaching was conducted by staff with backgrounds in social studies, then these trainees may have not fully appreciated its relevance to pharmacy. This was also indicated in a 1992 BPC workshop by Professor Ian Jones (then, lecturer at Bradford University) who stated that one of the difficulties inherent in including behavioural sciences to the syllabus was in recruiting qualified teaching staff (170).

The social sciences may appear to have little relevance to the health professionals other than psychiatry, psychology and social work, but all students need some understanding of human behaviour. Health professionals deal with sick people and illness alters behaviour. Aberrant behaviour is often evident in our society and the student needs to know something about the nature of self-destructive behaviour, such as addiction. The student needs to know how disorders of the mind can influence the outcome of physical disorders (171).

The overall conclusions on subject balance derived from the survey for consideration in an extended course are;

- a) Reduce further the time spent on teaching the basic chemistry science normally covered in the first year.
- b) Increase the teaching and content of the newer topics in the subject area of pharmacy practice, particularly 'clinical pharmacy', 'communication studies' and 'responding to symptoms'.
- c) Maintain the three-year content of all other scientific topics.

These overall findings have been mirrored by several smaller studies, described in Chapter One. The opinion on insufficient time allocation in the pharmacy course of communication studies was mirrored by the 1991 study of final year Welsh pharmacy undergraduate students (72). Lublin's study of recent graduates' opinions of the pharmacy course at the schools of pharmacy in Sydney and Melbourne in 1991 had shown that Chemistry and Microbiology were the least liked topics in the course and that the undergraduate curriculum should become more orientated to pharmacy practice and clinical pharmacy (73). The findings of the present survey also confirm the views expressed at the 1992 BPSA conference where a survey of members had shown that courses gave too much time to traditional academic subjects and did not offer enough practice-based and clinical training. Virtually all the members had agreed that too much time was devoted to chemistry (74).

4.4.6 Concept of specialisation

Figure 4.4 and 4.5 show that most topics attracted very similar strength of opinions from trainees in both community and hospital pharmacy regarding their usefulness and allocation of teaching time. The responses were based on early experiences of training. Therefore, it may have been difficult for respondents to be very critical with their opinions as they had yet to experience a wide range of duties or roles.

The only topics showing substantial difference in opinion on usefulness between branches were;

- a) Quality assurance (52% community ; 84% hospital)
- b) Analytical chemistry (30% community ; 67% hospital)
- c) Chemotherapy (72% community ; 94% hospital)
- d) Immunology (65% community ; 78% hospital)
- e) Pharmaceutical microbiology (53% community ; 80% hospital)
- f) Aseptics (39% community ; 93% hospital)

Many of these topics perceived by hospital-based trainees as more useful are related to knowledge required for some hospital-specific roles e.g. aseptics in sterile manufacturing or pharmaceutical microbiology in identifying disease causing organisms.

The topics showing substantial difference in opinion for increase in allocation of teaching time between branches were;

- a) Law and ethics (36% community ; 18% hospital)
- b) Dispensing practicals (52% community ; 36% hospital)
- c) Pharmacokinetics (24% community ; 32% hospital)
- d) Aseptics (13% community ; 35% hospital)

Both branches showed a very similar majority of respondents selecting an increase in time allocation for 'clinical pharmacy', 'responding to symptoms', 'communication studies' and 'social and behavioural studies'. These four topics in the pharmacy practice area are therefore regarded equally important by both community and hospital pre-registration students. The topic, 'aseptics', could be considered as a specialised option for teaching for those wishing to practice hospital pharmacy in the future. None of the other topics show strong differences between the two branches in both usefulness and allocation of teaching time.

Although Livingstone *et al* found that the concept of career-orientated specialisation was supported by a study of 600 practising pharmacists (81), there is no clear evidence to support this concept from the present survey of newly-graduated trainees. However, more importantly, any increase in teaching of 'clinical pharmacy', 'responding to symptoms', 'social and behavioural studies' or 'communication studies' should be kept within the core component of a course.

4.4.7 Difference in syllabus opinion between schools

As previously mentioned, the results on topic usefulness and time allocation were combined for all schools of pharmacy as schools showed little difference. There is a variation of only 3% between all fourteen schools of pharmacy in the study on the usefulness of all topics in Pharmacy Practice and a variation of only 6% for all other topics. There is a variation of only 5% between all fourteen schools on the time allocated for all topics being sufficient, other than two topics in Pharmacy Practice. Thirteen schools of pharmacy show a variation of only 2% for increased allocation of teaching time for the topics, 'responding to symptoms' and 'social and behavioural studies'. The trainees from the school of pharmacy at Aberdeen show a much lower response than all other schools for increased time allocation for both topics. Although the pharmacy syllabus will have been taught using different teaching methods and teachers and with differing emphasis from school to school, the comparisons show how similar the nature of pharmacy education is within the fourteen schools of pharmacy in the study.

4.4.8 Introduction of new topics in the course

The majority of respondents welcomed the inclusion of a selection of topics taught in countries around the world. The selection of topics mainly related to the social, clinical and practice aspects of pharmacy, as they had been given prominence in syllabi in countries outside the UK. In addition, the need to develop the teaching of 'social and behavioural studies' was one of the four important reasons for the RPSGB proposal to extend the course in 1992 (57). At the time of this study, the respondents were asked to consider the inclusion of these topics for a three-year course. However, the results are discussed, more appropriately, for a four-year course. From the results, the strength of opinion for inclusion of most of these topics in this study indicates that most of the topics should be included to some extent in the four-year course.

(a) Drug abuse and addiction

The overwhelming desire of almost all respondents in this survey to include drug abuse and its related factors in the course is mirrored by the increasing prevalence of the use and abuse of drugs in the UK. A substantial increase in information and understanding of 'newer' health dangers such as substance abuse and addiction including the impact of HIV has been regarded as beneficial by students in pharmacy courses as early as 1991 in the USA (172). In the UK, a small study in which five final-year undergraduate pharmacy students undertook a research projects by visiting a charity project involving drug abusers enabled the students to understand the nature of drug abuse and the problems associated with it (173). This could be one of the approaches adopted in teaching this area to all pharmacy students.

Future pharmacists will have a very important role in promoting the dangers of substance abuse to the public and any methods used to increase their knowledge in this area is welcomed. Although the teaching of this area has primarily been of a pharmacological nature, an extended course should include the social effects of drugs commonly abused. This would help the pharmacy student have a better understanding of the nature and long-term effects of addiction.

(b) Study of the provision of home health care

The inclusion of knowledge required for provision of a wide ranging service for patients in their home was strongly welcomed by all respondents in the present survey. The need for the pharmacist to provide this service is likely to increase in the UK.

The 1985 General Household survey found that thirteen per cent of over 65s cannot walk down the road alone and 16 per cent cannot do their own shopping in the UK (174). These numbers will continue to increase as the proportion of elderly people increase. The 1992 Pharmaceutical Care document stresses that Government policy is that as many people as possible should be treated in the community, and preferably in their own homes. The trend towards earlier discharge of patients from hospital means more people with complex health needs are dependent on primary health care services (175). In 1991, a survey of social-carers found that one third of these carers thought a domiciliary visit from the pharmacist would be useful (176).

If the undergraduate student is given an awareness and appreciation of this pharmaceutical service, this would facilitate their involvement on registration as pharmacists.

The extended course can also expand on the concept of home care by introducing the undergraduate pharmacy student to other members of the primary health care team. This would allow the student to develop an insight into the roles of other health professionals, develop self-confidence in their ability to work with these groups and understand the needs of the public requiring home health care.

(c) Study of food and dietary habits

The survey shows that knowledge of nutrition and dietary habits was regarded as an important area of inclusion. The increasing trend of people using laxatives for weight restriction, food supplements for 'body-building' and vitamin and mineral supplementation are issues a pharmacist can deal with competently. The pharmacist has the ability to advise on methods of ensuring a well balanced diet within limited resources, particularly relevant for families living on low incomes. In addition, the pharmacist has an important role in the dispensing, supply and advice of food products available on the NHS.

The value of inclusion of this area in the syllabus is supported by other studies. In a survey of community pharmacists in Britain in 1993, Macdiarmid *et al* noted that there was a need for more nutrition to be included in the curricula (177). More recently, an evaluation of the pharmacy curricula in Canadian schools found that nutrition was treated as only one component of a larger course, either compulsory or elective, and then largely with a clinical emphasis. The Canadian study recommended that nutrition sessions be made available to all graduates, after identifying the needs in this area of practising pharmacists (178). Again, the extended course should provide some teaching relating to the social and pharmaceutical aspects of nutrition.

(d) Clinical pharmacy by external integration

A strong majority of hospital (90%) and community-based (71%) trainee respondents valued the inclusion of teaching clinical pharmacy by integration in an actual hospital environment. Currently, some pharmacy courses provide sessions for students where a local hospital is visited and the role of the secondary health care team observed. A more structured session integrated with theoretical problem-based patient case studies would be an extremely effective method of teaching clinical pharmacy.

The importance of education in an external environment has also been underlined by a recent report in 1995 on the feasibility of teaching an element of medical education in a community environment. The report shows that there are considerable benefits to this form of education which include exposure to a range of common medical conditions presented in the community which more accurately reflect the morbidity of the population than patients seen in the hospital (179). However, there are practical and economical constraints to consider for the provision of this type of learning. These are discussed in more detail in Chapter Eight.

(e) Management and organisational study

A proportion of 64% of hospital compared to 83% of the community-based trainee respondents in this survey attached importance to the inclusion of business management and personnel organisational training in the course. Pharmacists in the hospital sector are not only required to manage the pharmaceutical aspects of direct patient care, but also to perform a host of other functions. These include economical and efficient procurement, supply, safe and secure storage and distribution of medicine. However, in 1993, Malek *et al* found that only 17% of the Heads of all UK schools of pharmacy advocated that management or business training be included in the core undergraduate curriculum. A majority (75%) did not want to include management or business training in the curriculum. It was the opinion of the study that most schools had not adequately responded to changes facing the profession and that despite recognising the need for the pharmacist to have a wide range of management skills, attempts to include management in the curriculum had been insufficient and lacking in depth and vision (180). The teaching of management was also supported in a 1995 report outlining the inclusion of undergraduate retail pharmacy management study in a school of pharmacy in the USA. This report indicated that a retail management study course was well received by students and concluded that if the course was to prepare graduates to meet the growing challenges in their profession which includes the management role, then management studies should be included in the curriculum (181). In a UK course, some courses provide some management study, usually as an option, and this should be retained in an extended course. However, it is not practical for the course to provide detailed management study specific to the needs of pharmacists in all branches. The course can provide an appreciation of this area, and pharmacists should further develop their management skills through practice or postgraduate study.

(f) Study of social issues

The value of the inclusion of teaching of management and understanding of social problems in the community was regarded as useful by the lowest majority of respondents (in comparison to all other topics in this question). Earlier, it was also shown that the topic 'social and behavioural studies' attracted the lowest proportion of trainees (in comparison to all other topics in Pharmacy Practice) who considered it useful in providing knowledge required to work effectively. Most of these trainees enter pharmacy with highly specialised physical science qualifications and are then taught by even more highly specialised scientists. This may then make it very difficult for them to understand or appreciate social science. As discussed in Chapter One, the introduction of the teaching of 'social and behavioural studies' in UK pharmacy courses is relatively more recent than in either the USA or in some Scandinavian countries and will require more time to develop.

Some suggestions for the development of social and behavioural study in the UK are;

- a) Introduce specialised training of pharmacist academic staff in this area who can then teach it with a pharmacy perspective.
- b) Greater integration with psychology and social science faculties to design a suitable curriculum in this area.
- c) Multidisciplinary teaching of this area using teachers from the above faculties in conjunction with pharmacy staff.
- d) Re-design of current teaching of communication skills and dispensing practice with emphasis on social issues prevalent in the UK.

All the new topics considered useful for inclusion in this survey can be incorporated as distinct entities in the new extended four-year course. Other areas for consideration in an extended course are;

- a) health economics, which has implications for both community and hospital pharmacists in ensuring cost-effective prescribing by practitioners (182).
- b) health promotion, the course can effectively teach the theoretical knowledge to enable graduates to become actively involved in promoting the health of the nation (183).

4.4.9 Learning methods

There was very strong support in this survey for the use of learning methods in schools of pharmacy which employ problem-solving skills. This method of learning was also emphasised strongly in the Nuffield report in 1986 (16). The merits of teaching based on problem-solving in pharmacy, or problem-based learning (PBL), has been discussed in length in Chapter One (90, 91, 92, 94, 95). PBL has also been shown to be effective in improving the student's ability to link required basic science knowledge with clinical case studies (184). PBL concentrates on giving students the tools for learning and as its' name suggests, students can identify a clinical problem and then set about solving it in a structured way. This form of teaching has been reported to produce students who will continue to learn throughout their careers (185). A PBL format, particularly in the pharmacy practice and clinical pharmacy curriculum, would enhance student learning.

However, this format inevitably involves teaching of students in small groups which has obvious long-term implications on staffing increment and stability of student numbers in schools of pharmacy. The Government's priority to increase access to higher education discussed in Chapter One also has long-term ramifications on increased student numbers in pharmacy (1, 2, 3).

Some of the issues facing pharmacy academia in the UK were also discussed at the 1993 BPC Academic Pharmacy Session. At the session, Dr David Mottram (Liverpool School of Pharmacy) stated that staff:student ratios had increased over the years and the move towards small group teaching was having to be reversed (186). In pharmacy for example, the staff:student ratio is near 1:20 in 1997 (8). It has been expressed by a prominent UK pharmacy academic, Professor Nicholls, that the increase in staff:student ratio has been partly due to funding from government being continually reduced and that the continuing pressure on maintenance of quality is being overridden by the need to accommodate more students for financial reasons (187). The continuing trend towards recruiting more students will make it difficult to introduce small-group PBL learning as a major element of the course. However, it can replace some of the time-intensive laboratory practicals and will enhance understanding of didactic lecture material much more than a practical. A format of learning which is not staff-intensive and can be used to back up didactic teaching material is computer-aided learning (CAL).

At the time of the survey, 30% of respondents had not used CAL in their course. These respondents were from the schools of pharmacy in Cardiff, Glasgow, Nottingham and Portsmouth. From the remaining schools that had used CAL, only 16% of respondents considered it as a very useful method, 40% found it to be of some use but 38% indicated CAL as being of little or no use as a learning method. This was obviously not a totally positive support for CAL at the time.

Since then, there have been major developments in the provision of computer-aided learning packages specifically for pharmacy education. In recent years, changes in computer hardware and software has made computer-assisted learning more realistically available to educational establishments (188). A CAL package, Pharmlex, has since been developed to which students can have access. This package provides information concerning the law relating to pharmacy and tests their knowledge of the subject using a MCQ format (189). In 1992, a consortium of pharmacy schools were successful in obtaining a grant of £203,000 in the first Teaching and Learning Technology Programme (TLTP) of the Higher Education Funding Council. The grant allocated to the consortium which was headed by the Bath school of pharmacy but which included all UK schools of pharmacy, allowed for the employment of full-time and part-time computer programmers at several schools. The consortium named the Pharmacy Consortium for Computer-Aided Learning (PCCAL) had by 1994 developed eight computer programs (190). PCCAL was formed to promote the effective use of CAL in the teaching of pharmacy to undergraduate students. The consortium was initially funded for three years but since January 1996, funding from the HEFCE under TLTP has been received for an additional three years. The consortium aims to continue developing new packages (191). Currently, there are over fifty PCCAL packages covering most of the syllabus topics. It is therefore important that these packages are used to accompany lecture-based didactic teaching and also be used as student directed study.

As CAL packages become more sophisticated and interactive, their value to the learning process will correspondingly increase. The use of CAL requires minimal staff supervision, and yet, incorporates a student-led problem-solving format. The use of CAL is also a common teaching method in the USA where it is used to teach areas like pharmaceutical formulation and delivery by incorporating simulation of physicochemical data. The CAL programmes are designed in the USA to encourage considerable critical thinking and problem-solving (192).

4.4.10 Overview of statements on the undergraduate programme

The results show that a small majority of trainees felt the course had been relevant to the knowledge required in practice. The study suggests that although pharmacy education in the UK is seen to be generally relevant to the needs of over half the trainees, there is still room for development of courses. One of the primary objectives of pre-registration training is to give the trainee, experience of applying in practice the knowledge acquired during the undergraduate course (99, 100). As the results have shown, a greater course orientation towards pharmacy practice and clinical pharmacy, may improve the provision of pharmacy education. There are also lessons that can be learnt from pharmacy education in the USA. A recent study by Arocho *et al* of 665 recent graduates of seven USA pharmacy schools found that in general, recent graduates were satisfied with their pharmacy education which had prepared them adequately to counsel patients and perform drug use reviews (193). Although the majority of trainees were confident of having working knowledge of drug formulation and delivery, a majority did not feel confident enough to recommend appropriate medication to achieve optimal therapeutic outcomes immediately after graduation. This implies that the undergraduate course provides the necessary scientific knowledge, but there is little or no confidence in applying any gained clinical knowledge.

A majority of the trainees agreed that the course had created an awareness of the role of the pharmacist in the three main branches of pharmacy. One of the primary principles of UK pharmacy education is to provide a student with a broad base of knowledge, from which a graduate can then develop specific areas relevant to a branch of practice. This is confirmed by the emphasis in the RPSGB accreditation guidelines for pharmacy schools which places great importance on the breadth of the syllabus (19). This implies that the course should raise awareness of the student of all the major sectors of pharmacist involvement.

There was very strong agreement that greater emphasis should be placed on teaching clinical and practice-based topics in the course. There is little difference in this opinion based on the school of pharmacy attended ranging from 100% of Strathclyde to 67% of Aberdeen educated trainees who agreed to this statement. Over 90% of trainees from seven schools agreed to this statement. The strength of this response simply reinforces earlier results which emphasised a much greater orientation of the course towards clinical and practice-based topics.

It is clear that an increased allocation of teaching time of current and inclusion of new practice and clinical-based topics would have been preferred by these trainees in enhancing their knowledge to practice effectively. The four-year course is an ideal opportunity to accommodate these recommendations.

Yet, as discussed in Chapter One, the RPSGB Council have approved the view of the heads of schools that for the new course, new or enhanced content will be added throughout existing programmes and that most of the new material will be scientific subject matter (58). Enhancing the existing content should allow for an increased time allocation of current practice and clinical-based topics, but many new areas considered in the survey may have to be neglected at the expense of greater scientific content. One of the major constraints to a much greater practice-based content is that, as discussed in Chapter One, pharmacy is funded by the HEFCE as a science course. This issue is discussed further in Chapter Eight.

4.4.11 Undergraduate teaching of topics classed as ‘must know’ in pre-registration examination syllabus

The ‘must know’ topics were regarded in the 1992-93 training manual as the topics in the examination of greatest priority and weighting of marks. The majority of these topics had been taught at undergraduate level and most respondents were confident of applying the taught knowledge in practice. The essential topics that the respondents felt had not been taught related to legal Acts regarding the work environment and the structure of the NHS. The nature of these topics suggests that they are best learnt in a practice environment i.e. in the pre-registration year. The results suggest that the course provides sufficient knowledge for most of the ‘must know’ topics, thereby enhancing the confidence of the trainee in applying them in practice before recalling in an examination.

4.4.12 Factors influencing choice of training

The factor ‘branch I want to work in after training’ was chosen by the highest number of trainees as the most important reason for choice of a pre-registration training location. However, this simple analysis does not take into account the numbers of respondents ranking each factor, or the actual rank given to it by all respondents. The rank order analysis method (described on p.98) will provide an overall rank order for each factor. Table 4.15 lists each factor with its’ calculated overall rank order (the lower the rank order, the higher the overall influence of the factor in choice of training).

Table 4.15: Overall rank order for each factor influencing choice of training.

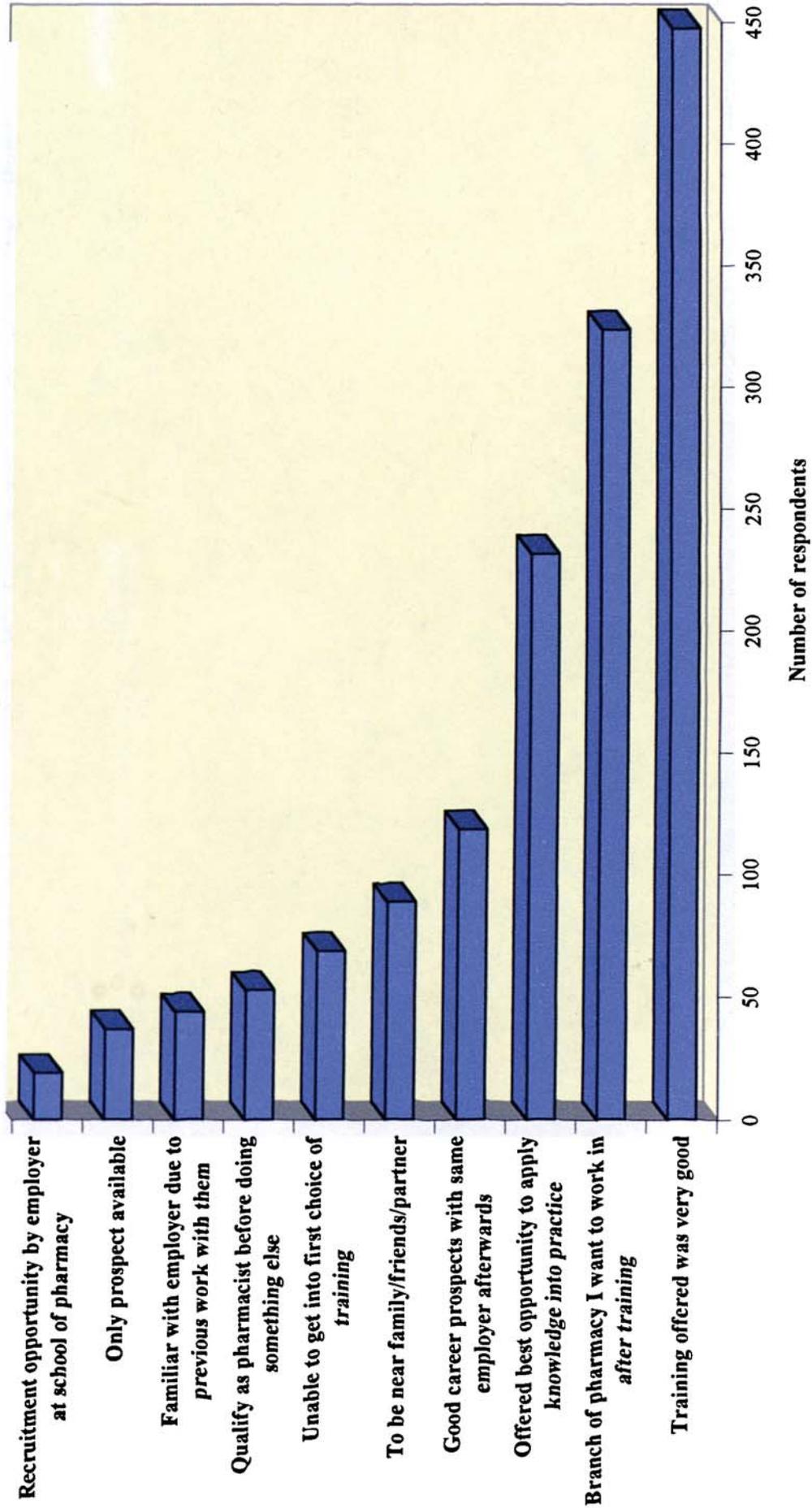
Factors	n	Rank order
Training offered was very good	595	1.988
Branch of pharmacy I want to work in after training	531	2.224
Offered best opportunity to apply knowledge into practice	450	2.640
Good career prospects with same employer afterwards	356	3.102
To be near family/friends/partner	324	3.674
Unable to get into first choice of training	148	3.736
Qualify as pharmacist before doing something else	182	3.763
Familiar with employer due to previous work with them	233	4.031
Only prospect available	118	4.060
Recruitment opportunity by employer at school of pharmacy	169	4.829

This order is exactly replicated, as shown in Figure 4.6, when the total number of respondents who selected each factor as the first or second most important factor of influence are combined.

The rank order analysis shows the quality of training offered as being clearly the most important factor influencing the choice of pre-registration training. The quality of training will be indicative of the standards trainees will adopt as pharmacists. It therefore places an onus on employers to maintain high standards of training and to continue improving the quality of training. The choice of training has a strong bearing on it being the future branch of work. The choice of a training is usually made by the student as early as the summer preceding the final undergraduate year. This suggests that many final-year students have already decided on their future branch of work. This would suggest that the course can offer greater specialisation options specific to a branch of pharmacy in the final year. However, earlier results from this survey on preference of topics based on branch of training were not conclusive enough to support the concept of specialisation.

There were no hospital respondents who chose the factor of '*good career prospects afterwards*' as their primary influencing factor and only four selected it as the second most important factor. This contrasts with 27% (n=105) of community-based respondents who selected this as the first or second most important factor in choosing their training. The promise of future employment is emphasised by many large-chain community pharmacy employers during training recruitment.

Figure 4.6: Number of respondents selecting each factor influencing choice of training as first or second most important.



The familiarity of an employer through previous work was selected as a very low factor of influence. This seems surprising considering that employers like Boots the Chemists spend considerable time and effort employing undergraduate pharmacy students during vacations. It is envisaged that one of the purposes of vocational employment will be for the employer to impress on the student the benefits of future employment with them.

4.4.13 Perceptions and expectations of the pre-registration year just commenced

There was a considerable disagreement with the statement ‘*at the completion of my pre-registration year, I feel confident that I will be able to work as a pharmacist in any branch of the profession*’. It is likely that this confidence will further decrease as the training progresses and trainees become more firmly entrenched in the specific practices of their branch. However, currently a pharmacist can move from one branch to another a day after registration and assume sole responsibility. For example, a hospital-trained pharmacist who has no employment in this sector, and therefore no income, can work in a community pharmacy immediately after registration. It appears that a period of 'acclimatisation' prior to changing branches of pharmacy, in which supervision and training are given by an employer/pharmacist or an approved postgraduate course, may be required. There are many unique skills specific to individual branches of the profession.

For example, skills and knowledge that may be different in community practice compared to hospital pharmacy are;

- a) Knowledge is required of OTC medicines and their suitability for appropriate symptoms and patients.
- b) The variety of prescriptions presented in community pharmacy which all have individual legal considerations before dispensing.
- c) Different legal and ethical dilemmas faced by community pharmacists.
- d) The immediate promotion to responsibility over staff and premises in many community pharmacies.

The Nuffield Committee recommended a further year of experience for a newly-registered pharmacist before assuming sole responsibility of a community pharmacy or hospital pharmaceutical department (16). This seems an extremely useful suggestion based on the results from this survey.

The strong support for the introduction of mandatory continuing education during the pre-registration year suggests that the respondents would like a formal indication of the minimum education required for them to train effectively. If mandatory education was introduced at this early stage, it would ease the transition of this mandate to all pharmacists in the foreseeable future.

4.5 CONCLUSION

- The desire to provide health care as an expert on drug use, which is effectively the primary occupation of a pharmacist, was the most important factor that influenced trainees to study pharmacy. Previous ability and interest in school chemistry was also a very important factor.
- School career guidance advisers or sessions had little influence in motivating the trainees to study pharmacy. This is an important method of career information dissemination. A suggestion would be for local pharmacy branch groups and schools of pharmacy to orchestrate career sessions in all schools and colleges offering university entry education.
- The desire to be a professional and own a business was attached greater importance as a reason for choosing to study pharmacy by Asian trainees compared to White trainees.
- Three of the four primary scientific subject areas taught in pharmacy schools, Pharmaceutics, Microbiology and Pharmacology, were perceived to provide knowledge useful for the trainees to work effectively. However they did not consider that the time allocated to these areas should be increased.
- The trainee respondents considered that three of the five topics within the Pharmaceutical Chemistry area were of little use for practice and that time allocated to these topics be reduced. Two topics, biochemistry and analytical chemistry, were considered to be of use and the time allocated sufficient.
- The results suggest that the time allocated to the scientific subject areas is sufficient and should not be altered in an extended course.

- Pharmacy Practice and Clinical pharmacy were regarded as useful in fulfilling knowledge requirements for practice. Four of the newer topics ‘clinical pharmacy, ‘social and behavioural studies’, ‘responding to symptoms’ and ‘communication studies’ were considered as areas where an increased allocation of teaching time was justified. These were the only topics that attracted this response, and should therefore be considered for expansion in a four-year course.
- A selection of clinical, practice and socially-orientated topics taught mainly in pharmacy schools outside the UK were strongly welcomed for inclusion in the course. These topics should be considered for inclusion in an extended course, even if it is to give students an awareness of the pharmacist’s role in those areas.
- The use of problem-solving skills was considered to be the most useful form of learning by respondents. This method ideally involve small groups of students for effective teaching and can be used to reinforce teaching through didactic formats. It is an effective method of learning for a student as it enhances understanding and deep-learning.
- Approximately one-third of the trainees in this study had not used computer-aided learning as a learning method at their school of pharmacy. From the trainees who had used CAL, there were mixed responses regarding its’ usefulness as a learning method. This may be accounted for by the previous unavailability of sophisticated or interactive computer packages. Since the study, programs in CAL for pharmacy have developed considerably.
- The quality of pre-registration training offered is the primary factor that influenced choice of training. The second most important factor of influence was that the branch of training is where the trainee intended to work in after the pre-registration year.
- There was very strong support for the introduction of mandatory continuing education during pre-registration training. This will then make the transition to compulsory continuing professional development for pharmacists much easier.

CHAPTER 5

A survey of pharmacy pre-registration trainees seven months into the 1992-1993 training year

This chapter describes the results of a self-completion postal survey of pharmacy pre-registration trainees at a point just after mid-way of their training year.

The survey was mainly designed to obtain opinions from the pre-registration trainees as to the extent to which the training had met their expectations and fulfilled its objectives at this stage of the training year.

This study population was the same one surveyed at the beginning of their training year, described in Chapter Four.

5.1 AIMS AND OBJECTIVES

5.1.1 Aim of the survey

The survey was designed to follow up the pre-registration trainees surveyed in August and September 1992. At the time of this survey, the group had completed half their pre-registration training. The aim of the survey was to ascertain the extent to which the pre-registration year had at this point met the expectations of the trainees and fulfilled some training objectives.

5.1.2 Objectives

- To determine the branch of training of trainees.
- To ascertain the extent to which tutors had given guidance on the 'must know' topics in the pre-registration examination syllabus.
- To identify the extent to which the training had so far;
 - a) enabled identification and provision of relevant reference material for the examination.
 - b) exercised own knowledge and experience.
 - c) been a 'hands on' application of knowledge gained at school of pharmacy.
 - d) been what was expected of pharmacy
 - e) taught the day-to-day skills required of a pharmacist.
- To gauge the extent to which the trainees felt that they would choose to continue in the same branch of practice after registration.
- To ascertain the view of trainees on their choice of pharmacy as a career

5.2 METHODOLOGY

5.2.1 Survey population

The population used for this survey was the pre-registration trainees undertaking their training in the 1992-93 training year. This was the same population used in Chapter Four at the beginning of their training. This cohort were the first group of pre-registration trainees to have a qualifying pre-registration examination at the end of their training. The RPSGB offered the graduates an opportunity to sit a 'mock' examination, termed the pre-test, which would also serve the purpose of validating a pool of examination questions and help clarify any uncertainty over the format and style of the examination (110).

The pool of questions had been collected over the previous year from pharmacists, pre-registration tutors and academics and the pre-test would test their validity before the first-ever examination. The pre-test was held just over halfway through the training period at various venues around the UK (110). This provided an ideal opportunity to survey the group as a majority of trainees would be at the venues and could be surveyed immediately after the examination. As the pre-test was held over the 1993 Easter period, it enabled the author to visit several venues to conduct the survey.

5.2.2 Pilot study

A draft questionnaire was given to 10 pre-registration trainees who were training in the Birmingham area to provide comments and recommendations for improvement. The trainees were invited to Aston University and all kindly agreed to do so.

There were two main recommendations made by the pilot group of trainees;

1. The need for the questionnaire to be quick to complete and preferably no longer than one side of an A4 page. The pilot group felt that on completion of the pre-test, they would either want to travel back home immediately after or that they would be eager to spend some time with fellow trainee friends who would also be attending the pre-test. This would be the first time colleagues would be meeting since graduation.
2. The pilot group were given two methods of responding to all but one question which determined branch of training. The first method was a five-point Likert scale and the second, a 10cm line for each question with an extreme positive and negative response on either end of the line. The second method would require trainees to put a cross intersecting the line where a strength of response was felt appropriate. Although all the questions in the draft questionnaire were considered suitable, a Likert five-point scale was considered time-consuming to read and select an appropriate response.

The 10cm line response method was adopted for the main questionnaire. The words in the questionnaire was reduced in font size to fit on one side of an A4 page. An example of how to answer the questions was added. A brief outline explaining the reason for the questionnaire and the fact that it had no connection with the London Pharmacy Consortium, the examination organisation, was also stated.

5.2.3 The survey

The pre-test was held at several UK venues in March and April 1993. The survey involved visiting as many of the pre-test sites as possible in order to distribute questionnaires. Completed questionnaires were collected at the site. For those venues that could not be visited, the pre-test chief invigilators were asked for their assistance in distribution of questionnaires. Those who accepted were sent questionnaires by mail to be given to trainees to complete. For all the venues, the questionnaire was given to the trainee approximately ten minutes before completion of the pre-test. The trainees had been told that they would be receiving this questionnaire before commencing the pre-test. For the venues visited, the questionnaires from trainees were collected by the author on completion. For the venues not visited, there were two methods of questionnaire collection. At some venues, the trainees returned the completed questionnaires to the pre-test invigilator who returned them by post to the author. At one venue, reply-paid envelopes were sent with the questionnaires for the trainees to return at their own accord. This method of return was asked by the pre-test invigilator at this venue.

a) The venues visited by the author were:

- i) The School of Pharmacy, Brunswick Square, London
- ii) King's College, Chelsea, London
- iii) Aston University, Birmingham
- iv) University of Bradford
- v) Strathclyde University, Glasgow
- vi) John Moores University, Liverpool
- vii) University of Nottingham
- viii) University of Manchester
- ix) Boots training centre, Nottingham (for all Boots trainees)

b) The venues to which questionnaires were posted:

- i) University of Portsmouth
- ii) Brighton University
- iii) De Montfort University, Leicester
- iv) Robert Gordon's University, Aberdeen
- v) University of Bath (reply-paid envelopes sent for trainee's response)

There were a total of 823 respondents which represented 76% of the 1,081 trainees who sat the first pre-registration examination a few months later (112).

5.2.4 Questionnaire structure

All the questions except the one which determined branch of training required the respondent to intersect a 10cm line with a cross which defined their strength of opinion for each question. This form of response is used in social research where it is felt a strength of response is more important to ascertain. It also allows the respondents to choose anywhere along the line a response most appropriate to their feeling or emotion rather than forcing the selection of a pre-meditated answer (148). For all the questions where this form of response was required, 0cm represented a totally negative response and 10cm was a totally positive response. The analysis of each question involved measuring of the distance where the cross intersected the line to give an appropriate value. All the measurements were done with a 10cm ruler by the author. The values could then be grouped according to measurement, for example, every 2cm representing an opinion. Alternatively, the mean and standard deviation could be calculated for each question to show the overall strength of response. A copy of the questionnaire used in the survey is in Appendix 2.

5.2.5 Analysis of results

The total usable 823 responses, were entered into a SPSS Data Entry II programme and then analysed using the SPSS/PC programme. The statistical test employed was the chi-squared test which has been described on p.97-8. All results stated as significant are at a level of $p < 0.05$ unless a highly significant value of $p < 0.005$ is stated next to it.

5.3 RESULTS

5.3.1 Response rate

There were a total of 823 respondents of which 616 questionnaires were completed and collected on-site from the venues visited.

5.3.2 Branch of pre-registration training

Q1. 'Which branch is your pre-registration training in?'

The results in Table 5.1 show the number and percentage of respondents and the branch of pharmacy in which pre-registration training was undertaken.

Table 5.1: The number and percentage of respondents and branch of pre-registration training (n=823)

Branch of pre-registration training	Number (n=823)	% of respondents
Community pharmacy	495	60
Hospital pharmacy	274	33.5
Hospital and Industry (6 month split)	41	5
Community and Industry (6 month split)	10	1.2
Community and Hospital (6 month split)	2	0.2
Other	1	0.1

In 1992, the number of graduates, excluding sandwich course students, undertaking a full year in one branch of pre-registration training was 580 in community and 351 in hospital placements (194). The response rate to this survey from trainees in full-year community and hospital pharmacy were 85% and 78% respectively. The 'other' section in this survey represented a trainee who spent six months in a community pharmacy and six months with the National Pharmaceutical Association (NPA). This survey included fourth-year Bradford sandwich course students who were just completing the second of their six-month training period.

5.3.3 Opinions on the pre-test questions

Q2. 'To what extent were the questions in the pre-test more demanding than anticipated?'

This question shows a mean response of 6.273cm (sd = 1.9), which suggests that the majority respondents felt the questions were more demanding than expected. A total of 585 of 817 (72%) respondents to this question selected 6cm or more on the line.

Q3. 'Has the pre-test increased your awareness of the type of questions that may be set in the pre-registration examination?'

The mean response for this question is 7.241cm (sd = 1.99) suggesting that awareness had been strongly increased for a majority. A total of 633 of 822 (77%) respondents to this question selected 7cm or more on the line.

Q4. 'To what extent do you feel the pre-test utilised any knowledge attained at undergraduate level while studying pharmacy?'

The mean response for this question is 5.154cm (sd = 2.27) suggesting a mixed response. An equal split of 409 of 818 (50%) respondents chose either side of the 5cm point on the line. The majority of respondents (56%) selected between 3cm and 7cm on the line. The result suggests that the knowledge from the undergraduate course was utilised in the pre-test to some, but not a great, extent.

SUMMARY POINT - 7

The pre-test questions were more demanding than initially anticipated by the trainees, but, they increased the awareness of a majority of trainees as to the nature of questions that would appear in the examination.

5.3.4 Guidance by tutor on 'must know' topics

Q5. 'To what extent does your pre-registration tutor give you guidance on topics that are classed as 'must know' in your manual and may be asked in the exam?'

As discussed in Chapter Two, the trainee's knowledge in the 'must know' topics was essential for success in the 1993 pre-registration examination. These topics were listed in the 1992 pre-registration examination syllabus and would have the greatest priority and weighting in the examination (103). A total of 556 of 818 (68%) respondents selected a response from 0 to 4cm on the response line. The mean response is 2.882cm (sd = 2.75) strongly suggesting that little guidance was given to these trainees on this aspect.

5.3.5 Opinions on extent to which training has fulfilled objectives and expectations at this stage

The results for each question in this section have been placed in individual tables accompanied with the mean and standard deviation.

Q6 a. 'To what extent do you feel your training has enabled you to identify and provide relevant reference material to help you to pass the exam?'

Table 5.2: The percentage and number of respondents in each response group

Very little or no extent (0-2cm)	Little extent (2.1-4cm)	Some extent (4.1-6cm)	Greater extent (6.1-8cm)	Much greater/complete extent (8.1-10cm)
10% (78)	16% (134)	26% (216)	32% (264)	16% (130)

The mean response is 5.852cm with a standard deviation of 2.42cm.

Q6 b. 'To what extent do you feel your training has enabled you to exercise your own knowledge and experience?'

Table 5.3: The percentage and number of respondents in each response group

Very little or no extent (0-2cm)	Little extent (2.1-4cm)	Some extent (4.1-6cm)	Greater extent (6.1-8cm)	Much greater/complete extent (8.1-10cm)
3% (29)	10% (79)	24% (194)	43% (354)	20% (162)

The mean response is 6.404cm with a standard deviation of 2.05cm.

Q6 c. 'To what extent do you feel your training has been a 'hands on' practice of what you learnt at your school of pharmacy?'

Table 5.4: The percentage and number of respondents in each response group

Very little or no extent (0-2cm)	Little extent (2.1-4cm)	Some extent (4.1-6cm)	Greater extent (6.1-8cm)	Much greater/complete extent (8.1-10cm)
11% (94)	21% (172)	27% (216)	25% (203)	16% (131)

The mean response is 5.281cm with a standard deviation of 2.52cm.

Q6 d. 'To what extent do you feel your training is what you expected of pharmacy?'

Table 5.5: The percentage and number of respondents in each response group

Very little or no extent (0-2cm)	Little extent (2.1-4cm)	Some extent (4.1-6cm)	Greater extent (6.1-8cm)	Much greater/complete extent (8.1-10cm)
5% (40)	13% (110)	21% (170)	36% (295)	25% (206)

The mean response is 6.33cm with a standard deviation of 2.35cm.

Q6 e. 'To what extent do you feel your training is teaching you the day to day skills you will require as a pharmacist?'

Table 5.6: The percentage and number of respondents in each response group

Very little or no extent (0-2cm)	Little extent (2.1-4cm)	Some extent (4.1-6cm)	Greater extent (6.1-8cm)	Much greater/complete extent (8.1-10cm)
3% (23)	7% (62)	16% (131)	35% (284)	39% (319)

The mean response is 7.133cm with a standard deviation of 2.19cm.

SUMMARY POINT – 8

The training had to a greater extent allowed the majority of trainees to use their own knowledge and experiences during training. There was no clear indication as to the training having been a practical application of undergraduate knowledge. However, there was a strong indication that the training was providing the day-to-day skills required as a pharmacist.

5.3.6 Intended branch of practice as a pharmacist

Q7. 'After your pre-registration training, do you hope to stay in the same branch of the profession that you are currently in?'

Table 5.7 shows the percentage and number in each group of response for this question.

Table 5.7: The percentage and number of respondents in each response group

Definitely not/very probably not (0-2cm)	Probably not (2.1-4cm)	Probably (4.1-6cm)	Quite probably (6.1-8cm)	Very probably/definitely (8.1-10cm)
9% (73)	6% (48)	16% (136)	14% (115)	55% (449)

The mean response is 7.348cm with a standard deviation of 3.01cm.

5.3.7 The choice of pharmacy as a career

Q8 'At this moment in life, how do you feel about having chosen pharmacy as a career?'

The percentage and number for differing extent of feeling of pharmacy as a career choice is shown in Table 5.8.

Table 5.8: The percentage and number of respondents in each response group

Very disillusioned (0-2cm)	Disillusioned (2.1-4cm)	Uncertain (4.1-6cm)	Happy (6.1-8cm)	Very Happy (8.1-10cm)
10% (79)	12% (97)	21% (173)	26% (215)	31% (265)

The mean response is 6.283cm with a standard deviation of 2.79cm.

SUMMARY POINT – 9

There is a strong indication that a majority of trainees would continue practice in the same branch after registration. The majority of respondents were happy or very happy about having chosen pharmacy as a career.

5.4 EVALUATION AND DISCUSSION

The proportions of community respondents (60%) in the survey shows a very strong similarity with the proportion (59%) training in this sector during 1992-93 (159). This may be partly explained by the fact that all those who trained with Boots the Chemists sat the pre-test at the Boots training centre in Nottingham, which was one of the venues visited. Boots the Chemists represent the largest single employing body for community pre-registration training.

5.4.1 The pre-test

The pre-tests were held by the London Pharmaceutical Consortium, an independent body contracted out by the RPSGB for devising examination papers and organising examination centres (109). The pre-tests were held partly to provide potential candidates for the registration examination with an opportunity to practice multiple-choice questions of the styles to be used in the examination itself. The tests were also a necessary process in the validation of multiple-choice questions after receipt from the question writers (109).

As discussed in Chapter Two, the pre-tests would therefore evaluate the questions for possible inclusion in the closed item bank and would remain confidential, that is, no questions or papers would be given to the trainees after the pre-test. The London Pharmaceutical Consortium would also provide feedback in the form of a summary for these trainees compared with that for all participants, from the results of each pre-test paper (110). The registration as a pharmacist is subject to a trainee achieving a minimum pass mark of 70% in the examination (108). As this was the first-ever examination, it was therefore important that the pre-test gave the trainees a good indication of the nature and style of examination questions. It was also important that the trainees becomes aware of how potentially difficult the examination would be. This would then provide sufficient indication of the revision required before the examination.

The results showed that the pre-test increased awareness for most of the trainees as to the type of questions that would appear in the examination. However, a majority of trainees felt the questions in the pre-test had been more demanding than initially anticipated. Chi-square analysis shows no significant differences between numbers of community and hospital respondents who found the pre-test more demanding (6-10cm). This implies that these trainees would now be aware of the nature and extent of revision required before the examination.

5.4.2 Utilisation of undergraduate knowledge in the pre-test

The pre-registration examination was introduced because the Council believed that there was an independent need to assess the ability of graduates to recall and apply knowledge gained both during the undergraduate course and the pre-registration year by means of a highly structured and objective method (102). Therefore, previous knowledge gained at undergraduate level would to an extent be expected to aid performance in the pre-test. The results to this question in the survey suggest exactly that. The majority of responses indicated that some extent of undergraduate knowledge had been utilised.

5.4.3 Guidance on ‘must know’ topics

A majority of 66% of all community, 69% of hospital and 80% of split-scheme trainees felt that at the time of the survey, little/very little or no guidance (0-4cm) had been given by tutors for the ‘must know’ topics (mean =2.9 cm).

The 1992 pre-registration manual stated that setting, scoring, weighting and proportional frequency of questions reflected the emphasis on application, analysis and evaluation of content appropriate to the practising pharmacist. The topics were therefore classified as ‘must-know’, ‘should-know’ and ‘could-know’ and the examination questions and weighting of marks would reflect these priorities (103). The ‘must know’ topics were therefore considered as having the highest priority and knowledge of these would be essential for the examination. Although the syllabus was divided into seven major sections, as explained in Chapter Two, specific topics within each section had been given the above classification.

The ‘must know topics in the 1992-93 manual were (103);

• Sale and supply of medicines and poisons
• Professional Ethics
• Health and safety at work
• Safe systems at work
• Consumer Protection
• NHS Authorities/Boards
• The NHS, the Department of Health and the Government
• The basis of responding to symptoms including the major categories of symptoms and the appropriate responses by a pharmacist (all related subject areas)
• Reading and interpreting prescriptions
• Therapeutic knowledge base
• Drug action, absorption, distribution, metabolism and elimination
• Adverse drug reactions, side effects, drug interactions and contra-indications
• Reference sources
• Information services of the RPSGB and the NPA
• Advice to patients and carers
• Advice to doctors and other health care professionals
• Advice to members of the public
• Extemporaneous dispensing methods
• Stability and storage
• Labelling
• Good dispensing practice
• Storage of stock

It has been stated by an RPSGB training personnel that since the examination is designed to test the knowledge that is essential for practice, pre-registration training which meets the Society's requirements should be sufficient to enable trainees to answer questions correctly. While the ultimate responsibility for learning rests with the trainee, the major contribution that tutors can make is to give trainees sufficient problem-solving experience and responsibility during the training year to enable them to approach the examination as independent thinkers and practitioners (109).

This implies that tutors should be familiar with the examination syllabus, in particular, the 'must know' topics, which can then allow them to give their trainees related problem-solving experiences. The nature of many of the above 'must know' topics is such that the knowledge relating to them can be applied in practice regularly. If for example we consider a 'must know' topic in the syllabus such as '*Sale and supply of medicines and poisons*', it would be naive to consider that knowledge for this topic can be solely learned from a book. A student's understanding of this topic and, thereby, the likelihood of answering questions successfully will be enhanced by practical experience in this aspect provided under the guidance of the tutor. The theoretical learning and practical application of some of these topics is inextricably linked. Tutors should be able to offer guidance on those practical training skills and problem-solving skills directly related to 'must know' topics which will enforce the student's ability to recall knowledge for the examination.

However, the results strongly indicate that tutors did not give sufficient guidance on these 'must know' topics to their trainees. There may be several reasons for this;

- a) The examination is seen by tutors to be isolated from the training and thereby testing knowledge that a student should obtain by reading and assimilating references in their own time.
- b) There is little perceived need to give guidance on topics which trainees are expected to apply in practice on a day-to-day basis.
- c) This was the first year of the examination and tutors are still uncertain about their role or involvement with aspects of the examination.

5.4.3 Aspects of training at this stage

A majority of 64% of community, 69% hospital and 56% split-scheme trainee respondents indicated great use (6-10cm) had been made at this stage of training of their own knowledge and experience. There is no significant difference in this opinion between community and hospital trainees. It is envisaged that trainees will at the commencement of training, bring with them, their own knowledge and experience gained at undergraduate level and through previous pharmacy vacation work. At this stage, the trainee should be allowed to appraise this level of knowledge and experience by applying it in the early stages of training. In this way, trainees will realise their own limitations and endeavour to acquire further knowledge in areas where their own is lacking and then build confidence by applying this knowledge in practice.

One of the objectives of pre-registration training is to bring the trainee to the commencement of a career in pharmacy practice, with a willingness to make professional decisions within current competence and a desire to continually improve competence through experience as well as study (99). This requires self-motivation which can only be achieved if the trainee is allowed to use and learn from their own on-going knowledge acquisition and experience, which the results suggest was the case.

Another objective of pre-registration training is to give the trainee, experience of applying in practice the knowledge acquired during the undergraduate course (99, 100). However, there was a mixed response as to whether the training at this stage had so far been a 'hands-on' application of the knowledge learnt at undergraduate level. This appears to be a poor reflection of undergraduate courses as it seems the trainees were unconvinced about the link between undergraduate education and training or reflects a stage of their career where they are not utilising their full range of knowledge.

Two reasons that may explain this indeterminate response;

1. As the results in Chapter Four suggest, these trainees would have preferred a much greater teaching of clinical and practice-based topics at undergraduate level. An increased allocation teaching of these topics would have allowed a much greater and direct application of knowledge into training practice.
2. The teaching at undergraduate level does not relate the relevance of topics or link their application to practice. This was one of areas of improvement suggested by the Nuffield Committee (16).

A majority of the trainees from community (75%) and hospital (76%) practice considered that the training was teaching them the day-to-day skills they would require as pharmacists. The difference between the numbers in each branch with this view and those who felt it was not teaching day-to-day skills was statistically significant. This suggests that training in both areas is generally well organised offering highly structured training programmes relevant to future career development in each sector.

There was a strong indication that a majority of trainees would stay in the same branch of pharmacy after training. In Chapter Four it was shown that the desire to stay in the same branch after training was rated the second most important factor for choice of pre-registration training. The present survey suggests that the training experience upto this stage for many trainees has simply confirmed the desire to practice in the same branch after registration.

A majority of 57% of all respondents at this stage were happy (6-10cm) with their choice of pharmacy as a career compared to 22% who were somewhat disillusioned (0-4cm). There is no difference between community, hospital or split-scheme respondents, all showing a majority who feel happy about having chosen pharmacy as a career. Of the respondents who expressed disillusionment with pharmacy, the majority (70%) were training in the community sector. There may be several reasons for some trainees to be disillusioned with pharmacy at this stage

Some of these are that;

- a) the trainee's expectations of the role they would carry out as pharmacists does not correlate to what has been observed in training.
- b) the trainee does not feel pharmacy is as intellectually stimulating or interesting as initially perceived
- c) the tutor does not present a very professional attitude or high standard of professional work The tutor should act as a role model for the trainee endeavouring to lead by good example (108)

5.5 CONCLUSION

- The pre-test achieved the objective of raising the awareness of this group of the type of questions that would appear in the examination. Although the pre-test was found to be more demanding than initially anticipated, it would give the trainees a good indication of the nature and amount of revision required to pass the examination.
- There was a strong indication that little guidance was provided by tutors for essential examination topics. Tutors can encourage their trainees to apply knowledge from essential examination topic areas by recognising areas of practice and creating problem-solving scenarios where this would be possible. This would enhance the ability of the trainee to recall this knowledge in the examination.
- The training had to this stage, allowed the trainee to develop the skills required of a pharmacist in hospital and community pharmacy with the use of their own knowledge and experience. This will encourage the trainee to recognise their own limitations and develop personal professional competence throughout their career.
- The trainees did not provide a strong confirmation that the training was an application or utilisation of knowledge gained at undergraduate level. This underlines the conclusion made in Chapter Four, based on results from the same population, that the pharmacy course requires a greater orientation towards subject areas which have a direct application to practice.
- The majority of hospital and community-based trainees were in all likelihood intending to remain in the same branch as training after registration as pharmacists and were happy about having chosen pharmacy as a career.

CHAPTER 6

A survey of newly registered pharmacists in 1993

This chapter describes the results of a self-completion postal survey of a sample of pharmacists who had just registered to practice in 1993.

The survey population included the majority of pre-registration trainees surveyed at the beginning and mid-way stage of their pre-registration training year, described in Chapters Four and Five. This survey obtained retrospective opinions from a sample of this population on the pre-registration training just completed including the first-ever pre-registration examination.

6.1 AIMS AND OBJECTIVES

6.1.1 Aim of the survey

This was the third questionnaire distributed to pharmacy graduates of 1992. The first and second questionnaire, described in Chapter Four and Five respectively, were distributed at the beginning (August 1992) and at a mid-way point (March 1993) of their pre-registration training. The first questionnaire analysed factors of importance for choice of pre-registration training and perceptions of the training year ahead. The second questionnaire analysed whether the training had fulfilled some of its objectives and met the expectations of the trainees half way through the training. It was the intention that this questionnaire would complement the first two by gathering retrospective opinions about the whole training year as observed by a pre-registration trainee. The primary aim of this survey was, therefore, to obtain opinions of the completed pre-registration training year including the first-ever pre-registration examination. In addition, the need for additional educational requirements during pre-registration training was ascertained.

6.1.2 Objectives

- To ascertain the branch in which pre-registration training was undertaken and branch of current work as a pharmacist.
- To determine level of satisfaction with the standard of training received.
- To obtain a retrospective opinion of the perceived purpose of the completed training year.
- To identify the extent to which more training would have been preferred in areas related to the 'must know' topics in the examination syllabus.
- To determine whether there was a need for an educational training course specific to the demands of pre-registration training and then identify the best possible method of delivery of this course.
- To ascertain whether the tutor was perceived to have a sufficient level of training for provision of pre-registration training.
- To identify the level of agreement to statements about the role of the pre-registration examination.

6.2 METHODOLOGY

6.2.1 Survey population

The survey population comprised all the individuals who had registered with the RPSGB to practice as pharmacists in 1993. The majority of the pharmacists in this population had completed a year of pre-registration training in the UK before registration. The population would also include some pharmacists who may have undertaken education and training overseas, but were allowed to register in the UK. Some countries, like New Zealand, have a reciprocation agreement with the RPSGB. A sample of 300 pharmacists from this population were used in the survey. This represented approximately 1 in 3 of the registered pharmacists and the sample and addresses were provided by the RPSGB.

6.2.2 Pilot study

A draft questionnaire was given to six newly-registered pharmacists from this population who had commenced postgraduate study at Aston University. Of this pilot group, three had undertaken pre-registration training in community pharmacy, two in hospital pharmacy and one in a 6-month split scheme involving the pharmaceutical industry and hospital pharmacy. The main revision to the draft questionnaire as recommended by the pilot group was to make the open questions on educational participation and preference during training, easier to answer. These questions were redesigned to a closed format offering one or more responses to be selected or for responses to be ranked in preference. The pilot study group also suggested the inclusion in the covering letter accompanying the questionnaire, of a statement congratulating the recipients in joining the profession and wishing them luck in their careers. It was felt this would increase the response rate.

6.2.3 The survey

Following the pilot study, a postal questionnaire accompanied by a covering letter and a reply-paid envelope was sent to a random sample of 300 of the pharmacists who registered with the RPSGB in 1993. The questionnaires were posted in November 1993, approximately three months after registration as a pharmacist. This would allow the inclusion of any pre-registration trainees who may have failed the first pre-registration examination but were successful in the resit in October 1993. A total of 79 candidates had failed the first examination in July 1993 (112). The random sample and accompanying addresses were provided by the RPSGB by selecting every *n*th address from the population for randomisation. The questionnaires were treated in strict confidence and no individual could be identified.

6.2.4 Questionnaire structure

The majority of questions were a combination of those requiring the respondents to circle one or more numbers corresponding to an appropriate response and those designed with a Likert scale whereby respondents were asked to for example, agree or disagree with a statement along a five-point scale (e.g. strongly agree, agree, indifferent, disagree, strongly disagree). Open questions were not widely used as, although they are capable of eliciting a wide variety of responses and provide more in-depth data, they are difficult to analyse and are often ignored by respondents (158). A copy of the questionnaire is included in Appendix 3.

6.2.5 Analysis of results

The total usable 148 responses, were entered into a SPSS Data Entry II programme and then analysed using the SPSS/PC programme. This program has been described further on p.97 in the methods chapter. The statistical test employed was the chi-squared test which has been described on p.97-8. All results stated as significant are at a level of $p < 0.05$ unless a highly significant value of $p < 0.005$ is stated next to it.

6.3 RESULTS

6.3.1 Response rate

One hundred and fifty (150) newly-registered pharmacists responded to the questionnaire. Of these, 2 responses were unusable as they did not undertake pre-registration training in the UK in 1992-93. A total of 148 responses were therefore analysed. This represented a total response of 49% of the 300 questionnaires sent.

There was no follow-up of non-respondents for this study because the most appropriate time for it coincided with the Christmas period in 1993. It was felt that there would be a very poor response rate during this period which would not be cost-effective. The response rate in this study represents approximately 14% of the population who had had trained in the 1992-93 year. This will therefore be taken into consideration during the discussion as some responses may not be representative of the population.

6.3.2 Branch of pre-registration training and work as pharmacist

Q1. 'In which branch did you undertake your pre-registration training?'

Table 6.1 shows the branch of pharmacy where pre-registration training was undertaken by the respondents.

Table 6.1: Number and percentage of respondents and branch of pre-registration training previous to registration as pharmacist (n=148).

Branch of training	Number of respondents	% of respondents
Single independent community	8	5.5
Community chain 2-10	5	3.5
Community chain 11-50	4	2.5
Community chain >50 pharmacies	57	38.5
Hospital	53	36
Industry and Hospital	11	7.5
Industry and Community	1	0.5
Community and Hospital	7	4.5
Other	2	1.5

A total of 50% of the respondents undertook a full year of training in community pharmacy.

The percentage of respondents who spent a full year of training in hospital pharmacy (36%) was similar to the total proportion of all pre-registration trainees in the 1992-93 training year in this sector of 38% (159). The survey population included Bradford sandwich-course students who graduated and registered in 1993. This may partly explain the high number of split-scheme respondents.

Q2. 'In which area of pharmacy are you currently working?'

Table 6.2 shows the number and percentage of respondents in the branch of work as pharmacists after registration.

Table 6.2: Number and percentage of respondents and current branch of pharmacy.

Branch of pharmacy work	Number of respondents	% of respondents
Single independent community	4	2.5
Community chain 2-10	5	3.5
Community chain 11-50	4	2.5
Community chain >50 pharmacies	60	41
Hospital	39	26.5
Industry	4	2.5
Postgraduate study (full-time)	14	9.5
Full-time community locum	8	5.5
Pharmacy teaching (academia)	1	0.5
Other (unspecified)	9	6

Of all the community pharmacists, 6 trained in hospital pharmacy and 7 trained in six-month split schemes of different branches (5 in community and another branch). Of the 39 pharmacists working in hospital pharmacy, only 1 trained in community pharmacy, 2 trained in a hospital/community split scheme and 1 in a hospital/industry split scheme. Of the four industrial pharmacists, 3 trained in a industry/other split scheme and 1 in a community/hospital split scheme. The data from Table 6.1 and 6.2 has been combined in Figure 6.1 to allow a further comparison of numbers of respondents in each branch during pre-registration training and at the time this survey was undertaken shortly after completion of training.

6.3.3 Purpose of the pre-registration training year

Q4. 'Please state your level of agreement with the following statements that may be used to describe the purpose of the pre-registration year'.

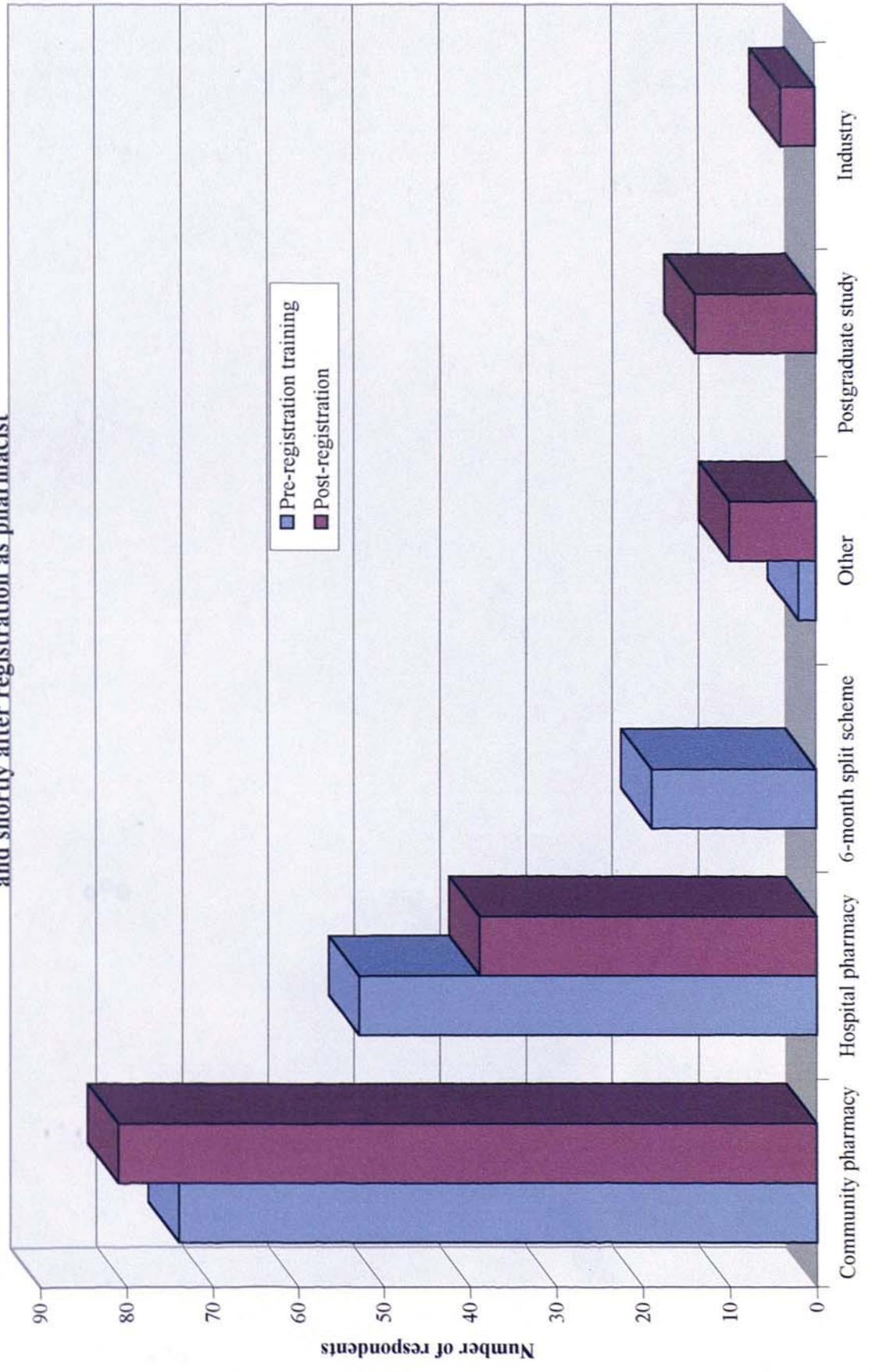
It was necessary to determine what the study group perceived as having been the purpose of the completed training year. In order to do this, the respondents were asked to state their level of agreement to several statements each offering a supposed purpose of the year. The statements were derived from the RPSGB objectives of pre-registration training stated in the 1993 Byelaws on Pre-registration Training (100). The responses are shown in Table 6.3.

Table 6.3: Respondents' level of agreement to statements offering a supposed purpose of the pre-registration year just completed.

Purpose of pre-registration year	% of respondents	
	Strongly disagree or disagree	Strongly agree or agree
Necessary to gain practical experience in the workplace	1	97
Necessary to develop professionalism prior to practice	4	86
Necessary to apply knowledge and skills gained at University	5	80

All three statements show a highly significant difference ($p < 0.005$) between the number of respondents who strongly agree/agree and those who strongly disagree/disagree. The results imply that most respondents felt their training had achieved three of its' important objectives.

Figure 6.1: Comparison between number of respondents in each branch during pre-registration training and shortly after registration as pharmacist



6.3.4 Standard of training

Q5. 'How satisfied were you with the standard of pre-registration training you received?'

A total of 30% of all respondents indicated that they were very satisfied and 49% satisfied with the standard of pre-registration training they had received. Only 13 (11%) respondents indicated dissatisfaction with their training. Of the 13 respondents, 2 trained in a community chain of 2-10 branch size, 4 trained in a large community chain group (>50), 6 trained in hospital and 1 trained in a joint community/hospital scheme.

6.3.5 Extent of additional training required in the pre-registration year

Q7. 'Please state whether you would have liked more or less training in these subjects during your pre-registration year to prepare you to practice pharmacy.'

A selection of subject areas regarded as pertinent to the requirements of a practising pharmacist were listed in the survey. The respondents were asked to indicate whether they would have liked more or less training in these subject areas during their pre-registration year. All but one subject, were chosen from the topics listed as 'must know' in the 1992-93 pre-registration examination syllabus. A brief description of all the 1992-93 'must know' topics has been given on p.165. As discussed in Chapter Two, knowledge in the 'must know' topics was considered essential for success in the examination because they had the heaviest priority and weighting of marks in the examination (103).

There were three reasons for asking respondents to consider the 'must know' topics for an increased or decreased training. These were;

- a) In Chapter Five, the results had shown that a half-way stage of the pre-registration year, trainees had indicated that there had been a low level of tutor guidance during training on the 'must know' topics. An increased demand for training could therefore compensate for the lack of tutor guidance.
- b) Again as discussed in Chapter Five, the knowledge from these 'must know' topics is applied in pharmacy practice regularly and therefore necessitates continual knowledge development. An increased demand for training could therefore develop this knowledge.
- c) The results in Chapter Four indicated that a strong majority of pre-registration trainees had agreed with the concept of mandatory continuing education during the training year. Therefore, an increased demand for training in any of the selected 'must know' topics could be incorporated in a mandatory continuing education syllabus.

The subject area of Clinical Pharmacy was also listed for respondents to consider for two main reasons. These were;

- a) In Chapter Four, a large majority of trainees had expressed an increased allocation in teaching time of this subject at undergraduate level. It may therefore be seen as an important area requiring more coverage in pre-registration training as well.
- b) Any increased training in Clinical pharmacy would help prepare the trainee for future participation in continuing education clinical programmes for pharmacists.

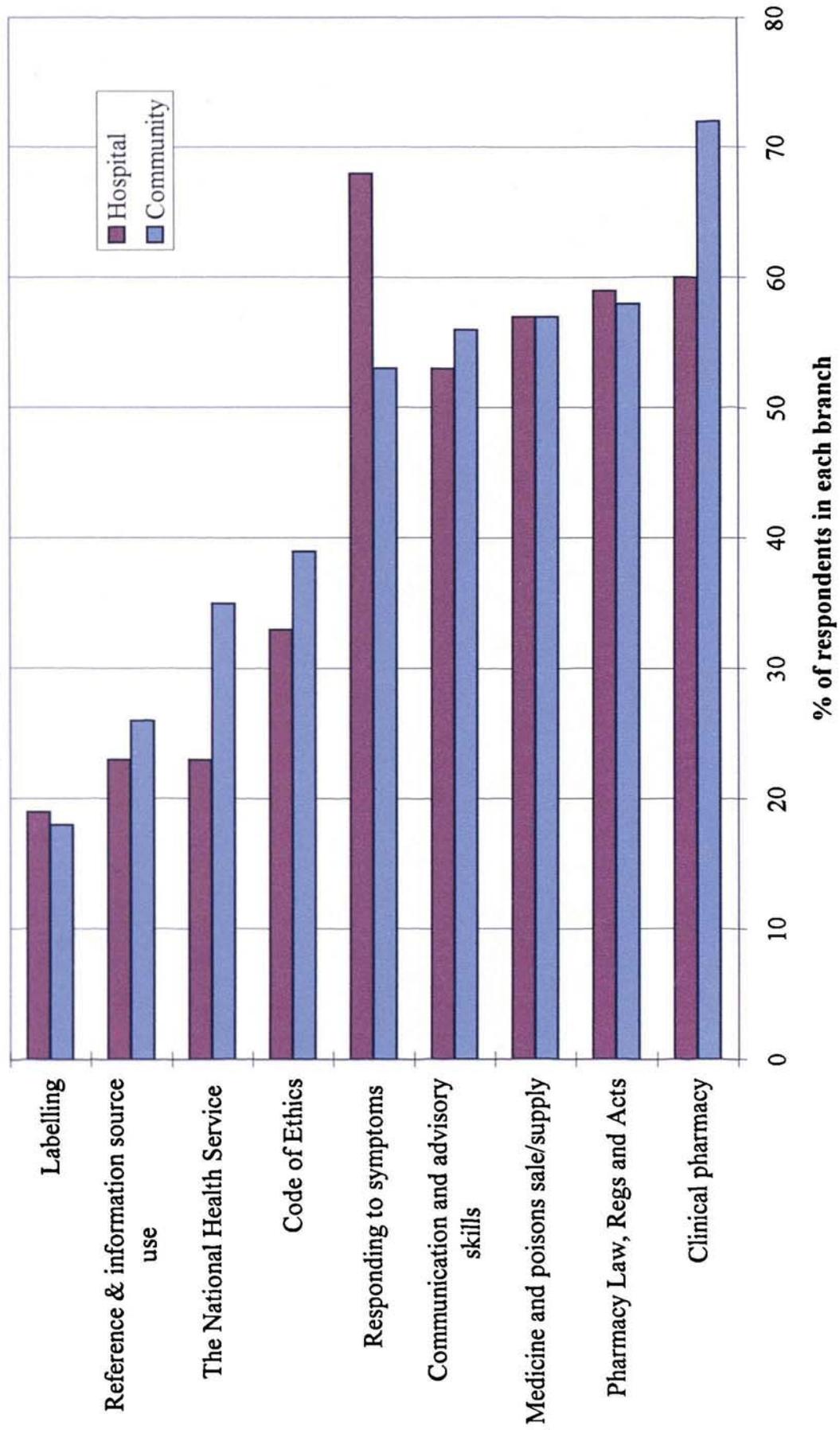
Figure 6.2 shows the percentage of respondents who trained the full-year in community and hospital pharmacy who would have liked more training in each selected topic during the pre-registration year.

The results show that 73% of community-trained compared to 60% of hospital-trained respondents would have liked more training in clinical pharmacy. Of the hospital-trained respondents, 68% would have liked more training in responding to symptoms compared to 53% of community-trained respondents.

Of all the topics, a traditionally hospital-orientated subject such as 'clinical pharmacy' was considered for more training by the largest majority of community-trained respondents. Conversely, a community-orientated subject 'responding to symptoms' was considered for more training by the largest majority of hospital-trained respondents. A similar majority of respondents from both branches would have liked more training in pharmacy law, medicine and poison sale and supply and communication and advisory skills.

The training in the remaining subject areas was considered sufficient by a similar majority in both branches.

Figure 6.2: The percentage of community and hospital-trained respondents who would have liked more training of each topic in a pre-registration course.



6.3.6 Attendance of a course specific to pre-registration examination requirements

Q9. 'How keen would you have been to attend an independent training course specifically for pre-registration training e.g. one organised by a school of pharmacy?'

A majority of 66% of respondents indicated that they were keen or very keen to attend such a course. There was a significant difference ($p < 0.05$) between the number of respondents who were very keen/keen (66%) and those not keen/unwilling to attend (12%). Further analysis reveals that all the respondents who had trained in independent and small to mid-chain community pharmacy groups (<50), 70% of respondents trained in large-chain (>50) pharmacy groups and 51% of the hospital-trained respondents would have been keen to attend a course. Of the hospital-trained respondents, 19% were not keen or unwilling to attend and 30% offered a neutral opinion. The results suggest that in general, trainees from the community sector would have been more enthusiastic about a pre-registration training course.

6.3.7 Delivery method of a post-graduate course specific to pre-registration training

Q10. 'The following are various methods which could be used to deliver a pre-registration training course. Please rank the following in order of which method would have best for you where 1 would be your first choice and 5 the last choice.'

Table 6.4 shows the delivery methods investigated and the percentages of respondents selecting each method as their first preference in the second column. The third column shows an overall rank factor calculated for each delivery method by using the rank order analysis method described in Chapter Three (p.98). The lower the calculated rank order, the higher the overall preference for that delivery method by the whole respondent group. The inverse relationship between overall rank order and preference has been explained on p.98 in Chapter Three.

Table 6.4: Percentage of respondents selecting each delivery method of a pre-registration training course as first preference and calculated overall rank order for each method.

Delivery methods	%	Rank order
Half day course	26	2.369
Distance learning and tutorials	29	2.521
Residential weekend	38	2.692
Evening course	2	3.692
Distance learning only	5	3.739

The results show that a residential weekend was selected as the delivery method of first choice by the greatest number of respondents. However, this method is not the lowest overall rank order i.e. highest overall preference. One reason for this is that this method may have also attracted a large number of responses giving it a very low preference. In other words, the number of respondents who feel this method is the best is counterbalanced by those who feel it is the worst.

Although the 'half day course' method was not selected by the largest number as first preference, very few gave it a very low preference. This explains why it has the lowest overall rank order i.e. highest overall preference. A reason for this lack of correlation between percentage and rank order is because there were differences in preference based on the branch where training was undertaken. Respondents who had trained in single independent community pharmacy and in all split training schemes showed 'Half day course' as method of highest overall preference. Respondents who trained in large-chain community pharmacy groups (>50) showed highest overall preference for 'Distant learning and tutorials'.

Respondents who trained in hospital pharmacy showed exactly equal highest overall preference for 'Half day courses' and 'Residential weekends'. However, of all the hospital-trained respondents, 13 selected 'Half day courses' and 23 selected 'Residential weekends' as their first preference. 'Residential weekends' would therefore appear to be the better preferred method for hospital trainees.

This indicates that if a pre-registration course was created, it would have to incorporate two or three methods of delivery to meet the preferences of hospital and community-based trainees.

6.3.8 The pre-registration tutor

Q14. 'Did you feel that your tutor had sufficient training to help you gain the most out of your pre-registration year?'

The respondents were asked to indicate a response on a scale of 1 to 5, where 1 indicated the tutor as being highly trained and 5 as not trained at all. A majority (55%) selected response 1 and 2 which indicated tutors had sufficient training. A proportion of 22% selected response 4 or 5 indicating tutors had an insufficient or no training.

A further analysis shows that only 37% of respondents who had trained in an independent or small to mid-size community pharmacy group (<50) felt the tutor had sufficient training compared to 55% of respondents who trained in large-chain community pharmacy (>50) and 57% of hospital-trained respondents.

6.3.9 The pre-registration examination

Q 15. 'Please state your level of agreement with these statements concerning the pre-registration examination.'

This study group were the first-ever to sit the pre-registration examination. One objective of the study was to determine the agreement level of respondents to statements regarding the role or purpose of the examination. The pre-registration examination was introduced because the Council of the RPSGB believed that there was an independent need to assess the ability of graduates to recall and apply knowledge gained both during the undergraduate course and the pre-registration year by means of a highly structured and objective method (102). The first statement therefore was to assess whether respondents agreed that the examination tested knowledge but not skills. The second statement was based on the analysis of the 1992-93 examination which had shown a strong correlation between the class of degree and success or failure in the examination (113). The third statement was to assess whether the examination was perceived to be a quality control process. The level of agreement to the statements is shown in Table 6.5.

Table 6.5: Respondents' level of agreement to statements regarding the pre-registration examination.

Statements on role of the examination	% of respondents		
	Strongly disagree/ Disagree	Neutral	Strongly agree/ Agree
A test of skills and knowledge gained in pre-registration year	42	27	31
A test of academic ability	29	22	49
A means of controlling the standard of pharmacists entering the profession	29	16	55

A small majority (42%) strongly disagreed/disagree that the examination tested skills and knowledge gained in the training year. However, a total of 58% of respondents were either unsure or agreed that both aspects were tested by the examination.

Only 49% agreed that examination was a test of academic ability. A clearer majority of 55% agreed that the examination controlled the standard of pharmacists entering the profession.

6.4 EVALUATION AND DISCUSSION

6.4.1 Branch of practice

There was a small increase in the number of respondents practising in community pharmacy as pharmacists compared to the number who trained in this sector. However, there was a substantial decrease from 53 respondents who had trained a full-year in hospital pharmacy to 39 working as hospital pharmacists after registration. Of all the community-trained respondents, only one moved to hospital practice after registration. On the other hand, only 35 of the 53 hospital-based trainees remained in this sector immediately after registration.

This has been a well known feature of the NHS 'educational role' which has always provided a greater number of training places for graduates in hospitals than the actual demand for pharmacists in this sector. However, it is crucial that the numbers eventually retained by the hospital sector are sufficient to fulfil their pharmacist manpower needs. Based on this study in 1993, approximately one-third of all hospital-trained pharmacists immediately left this sector on registration. If this trend was to increase, hospitals may actually face a shortage of newly-trained pharmacists. This has been confirmed in a recent report in 1997 which reports that there is a serious lack of applicants for basic-grade posts in hospitals around the UK. The report has highlighted areas around the country, for example E.Anglia, where there is an acute shortage of basic grade pharmacists. This problem has been partly attributed to an increased transition of new hospital-trained pharmacists to the community sector (195).

One of the reasons for this increasing transition is the salary differential for newly-qualified pharmacists in community and hospital pharmacy. A newly-qualified community pharmacist can earn more than double the salary on offer for an A or B-grade hospital pharmacist. A concern has been expressed by the Guild of Hospital Pharmacists that hospital salaries have fallen well behind those of in community practice, particularly for newly qualified pharmacists which will make it difficult to recruit pharmacists (196).

In contrast, of the 55 respondents who trained in the large-chain community sector (>50 pharmacies), only 6 left after training to other areas. This supports the indication that the large multiple groups recruit a certain number of trainees based on their perceived future need for pharmacists. Then, during the training these employers attach great emphasis in ensuring that the trainees are retained as pharmacists after registration.

There are several issues the hospital sector may need to consider to increase retention of their trainees after registration;

- a) Recruit numbers of trainees in a hospital based on actual eventual need for pharmacists. A smaller number of trainees can be given more attention and more effort can be made to ensure their later retention.
- b) Offer increased remuneration and incentive for newly-qualified pharmacists. It has been reported that hospital-trained pharmacists will be more likely to apply for basic-grade posts where for example, a postgraduate clinical diploma is offered (195).
- c) Have a better understanding of the future needs of hospital trainees. The majority of trainees recruited for hospital training in 1992 (Chapter Four) were women. It may be therefore necessary to provide and emphasise flexible work options and job sharing schemes for the women who wish to have a family after registration.
- d) Consider the future needs of trainees from different ethnic backgrounds. A longitudinal study of this group of 1992-93 pre-registration trainees (Chapter Nine) shows that the hospital sector retained a lower proportion of trainees of Asian origin compared to White trainees.

6.4.2 Purpose of the training year

The respondents strongly agreed that one of the purposes of pre-registration training is to develop the professionalism of the trainee prior to practice. The training has as its aims, to reinforce among pharmacy graduates an awareness that they are to become members of a profession and to develop further within them professional attitudes and a sense of responsibility (99, 100). Although the undergraduate pharmacy course can introduce and emphasise the need for a professional attitude during practice, the pre-registration training provides the environment to develop this attitude and professional commitment. It has been expressed that the importance of commitment to the pharmacy profession, like continuing education, is a hallmark of a profession (197).

One of the objectives of pre-registration training is to give the trainee, experience of applying in practice the knowledge acquired during the undergraduate course (99,100). In principle, 80% of the respondents in the present study agreed that this was one of the purposes of the training year.

This principle was also supported by respondents from the study of the same population at the beginning of training, where 78% of respondents had agreed that the training would allow them to apply their undergraduate knowledge (Chapter Four). However, the study of the same group during their training (Chapter Five) found there was no clear support that the training at that stage had been an actual 'hands on' practice of what had been taught at undergraduate level. This implies that theoretically, pre-registration training should provide the opportunity to apply undergraduate knowledge and conversely, the undergraduate knowledge acquired should be relevant for it to be applied in training. In reality however, this may not be the case.

Some of the reasons from the perspective of undergraduate education have been discussed in Chapter Four and Five, with regard to increasing the emphasis of practice and clinical-based teaching in the undergraduate course.

From the view point of pre-registration training, two of the areas which the Nuffield Committee of Inquiry indicated were wrong in training still carry considerable weight. Firstly, it was felt that the training year had been designed in isolation from the content and structure of the degree course. It felt that some of the criticisms levelled at the course at that time could be met by the training year, particularly in learning how to apply the scientific knowledge gained in the practical environment of one of the three main branches. Secondly, it also felt that the schools and teachers from the schools of pharmacy should have a more active role in the discussions of the ground to be covered by the training year. The school should be involved in the provision of educational sessions for the trainees and in part supervision of individuals. It was envisaged that the employment tutor would then have a better understanding of what schools were trying to achieve and problems faced and the school tutor would increase his understanding of how pharmacy is actually practised and be able to reflect this in his teaching (16).

The Nuffield Report was published over eleven years ago, and yet, many of the observations and recommendations remain extremely relevant to education and training.

6.4.3 Educational requirements during the pre-registration year

Three issues with a common theme on additional educational and training requirements during the pre-registration year were assessed in this survey. These were;

- a) Whether more training was required for a selection of subject areas deemed to be pertinent to requirements in practice.
- b) If an educational course specific to the needs of pre-registration trainees was required. It was envisaged that any subject areas from a) requiring more training could possibly provide part of the syllabus for this course.
- c) To ascertain the most appropriate method for delivery of a possible pre-registration course.

The results showed that more training would have been liked by a majority of respondents for five distinct subject areas. Additional training can be provided either by day-to-day pre-registration training or by means of an educational course. From these results, the latter would be favoured because it would be difficult to provide practice-based training in areas such as 'responding to symptoms' for hospital or industry-based trainees or 'clinical pharmacy for community-based trainees. In addition, a majority (66%) indicated they were keen for the implementation of an independent pre-registration course which further favours this format. A syllabus for a pre-registration course could partly comprise of subjects which respondents would have liked more training in e.g. clinical pharmacy, responding to symptoms, pharmacy law, medicine and poisons sale/supply and communication skills.

The method considered most appropriate for delivery of a course varied according to the branch of training. The majority of the community-trained respondents, who had trained with large-chain multiple groups, preferred a distance-based learning format incorporated with some tutorials. This format relies mainly on self-motivation but regular interaction through tutorials can complement the learning process. The majority of hospital-trained respondents appeared to prefer a 'residential weekend' format which indicates that these trainees would prefer interaction in a learning environment. This delivery method is used commonly by hospital-training organisations for weekend conferences and symposiums.

The following aspects could be considered in creation of a pre-registration training course;

- a) The course could contribute to a future post-graduate qualification with further study after registration.
- b) The course could be provided as modules on different subject areas, including those related to industrial practice. This would cover specific requirements within each branch of training.
- c) There could also be stipulation for compulsory completion of a specific module for each of the branches of training based on the results in the present study. For example, community-based trainees would have to complete a module on 'clinical pharmacy' and hospital-based trainees, a module in 'responding to symptoms'.
- d) The course could be provided through various formats. A number of modules could be provided by a distance-learning format. The module on 'responding to symptoms' for example, could be arranged as tutorials or workshops held over a residential weekend(s) or half-day meetings.
- e) The course could be run by a single organisation for a fee possibly subsidised by employers and the RPSGB. The organisation could, as with the CPPE system, appoint regional tutors who would organise the residential or tutorial sessions.
- f) Based on the results, the course would have greater appeal to community-based trainees but would be designed for trainees from all branches.
- g) Of most importance, is that the course would provide a format of structured learning which should motivate trainees to continue lifelong learning.

Currently, training organisations run pre-registration specific courses in localised areas. For example, a course for hospital pre-registration trainees on responding to symptoms has run for a number of years for trainees from Nottingham, Lincoln and Doncaster. The programme has covered a substantial proportion of the RPSGB registration syllabus looking at a variety of minor ailments presented in community pharmacy and the necessary questioning skills in ascertaining symptoms (198).

6.4.4 The pre-registration examination

The examination was created to check that a graduate who appears good in practice also possesses a sufficient breadth and depth of relevant knowledge and understanding to enable them to cope with practice problems and to adapt to changes in practice (102). Yet, approximately one-third of respondents agreed that it tested both skills and knowledge gained in the training year. In hindsight, the question was confusing as it was purposely misleading. It would have been better to divide this question into two, one assessing whether skills had been tested and one on the extent of knowledge tested. The examination cannot test skills, this is the role of the actual training.

The examination was only considered a test of academic ability by half the respondents. Yet, the evidence available suggests that it is a test of academic ability. The London Pharmaceutical Consortium's report to the Education Committee of a provisional analysis of the examination results in 1993 had shown a strong correlation between the class of degree and success or failure in the examination. The correlation was even stronger in the case of those who had failed again after resitting the examination in October (113).

This analysis confirms that trainees who had the academic ability to achieve a good degree classification were more likely to pass the pre-registration examination. The examination is designed to test a trainee's ability to recall knowledge for the closed paper and the ability to access the correct reference material in a limited period in the open book paper. Therefore, trainees with a high academic ability should perform better in the examination as they will recall knowledge and identify the most appropriate reference material more quickly and correctly. A small majority agreed that the examination controlled standards of new pharmacists. It may have been more appropriate to ascertain whether the examination was perceived firstly to control the number, secondly the academic standard and finally the professional standard of trainees registering as pharmacists.

A proportion of 92.6% of all the trainees in the 1992-93 training year passed the first ever pre-registration examination (112). In this study, 96.5% of the respondents passed the examination the first time they took it.

6.5 CONCLUSION

- This study showed that almost a third of hospital-trained pharmacists left this sector immediately after registration. This sector should reconsider their pre-registration recruitment and retention policies particularly in light of a UK-wide recent manpower shortage of newly-trained hospital pharmacists. It seems a futile policy to provide so many training places and then not manage to retain these trainees as pharmacists.
- There were five distinct subjects which respondents would have liked more training in during the pre-registration year. Two of these subjects, 'clinical pharmacy' and 'responding to symptoms' were considered for more training by a strong majority of community and hospital-trained respondents respectively.
- The majority of the newly-qualified pharmacist respondents would have been keen to participate in an independent educational course specific to pre-registration trainees. The subject areas which respondents would have liked more training in during the year could be incorporated in the syllabus of such a course. The participation of a trainee in such a course can not only aid knowledge development for the pre-registration examination and future professional practice, but also instil the philosophy of continuous lifelong learning.
- The ideal delivery method of a pre-registration course varied according to the branch of training. Therefore, a single newly-created pre-registration course for all trainees may have to incorporate several methods of delivery. Some subject areas could be delivered using distance-learning packages while others delivered in an interactive format during residential weekends or half-day meetings.
- The results suggested that the study group were unsure whether the pre-registration examination had tested both skills and knowledge and whether it had been a test of academic ability. However, in hindsight, it would be more appropriate to ask pharmacists who have taken the examination what they feel should be the ideal purpose and delivery method of the examination and assess how this correlates with its current objectives and format.

CHAPTER 7

Survey of pre-registration tutors in the 1993-94 training year, the first year competence-based assessment was introduced

This chapter describes the results of a self-completion postal survey conducted in 1994 of a sample of pre-registration training tutors.

The results of this survey and discussion focus on the role and structure of the pre-registration year from the perception of tutors in this scheme in the 1993-94 training year, the first year, competence-based assessment was introduced.

7.1 AIMS AND OBJECTIVES

7.1.1 Aim of survey

The pre-registration tutor is one of the most important influence in the developmental process of a pharmacist-to-be. The tutor should be a role model to the trainee and many of their working practices and professional characteristics such as attitude and demeanour, may be adopted by the trainee. In addition, the tutors' commitment to continuing education is likely to have a considerable impact on the trainee's future commitment in this area. There have been two major changes to the pre-registration training year since 1992 which affect both the trainee and tutor. The competence-based assessment of trainees in the pre-registration training year was introduced in the 1993-94 training period. This was preceded in 1992-93 with the introduction of a pre-registration examination for all trainees. These major changes have been described in detail in Chapter Two. This survey was designed, therefore, to ascertain the tutors' view on the role and structure of training particularly in light of these two changes. The survey was also designed to evaluate the training methods and system of supervision within different branches. As this was the first study of pre-registration tutors on a UK-wide basis, information regarding continuing education participation and preferred delivery for this group was also ascertained.

7.1.2 Objectives

- To obtain a profile of the respondents which includes branch of pharmacy and years of experience as a pre-registration tutor.
- To determine level of satisfaction with information received from the RPSGB with regards to the new changes to the training year.
- To ascertain the changes in training necessitated by the introduction of the pre-registration examination.
- To investigate opinions on the newly introduced competency-based assessment.
- To assess tutor participation in continuing education and appropriate methods of delivery of postgraduate education for tutors.
- To ascertain the views of tutors on the knowledge base evident in new trainees.

- To obtain information specifically from hospital pre-registration tutors regarding their training schemes. This includes;
 - a) Criteria used for selection of assistant tutors within the hospital system
 - b) Methods and frequency of feedback on student performance from assistant tutors.
 - c) Extent of training of assistant tutors to conduct competence-assessment.
 - d) The suitability of the newly introduced competency-based assessment for hospital-based trainees.
- To obtain information specifically from tutors based in the pharmaceutical industry regarding their training schemes. This includes;
 - a) The suitability of the pre-registration examination for pre-registration training in industry.
 - b) Criteria planned to achieve within the 6-month period spent by trainees in the pharmaceutical industry.

7.2 METHODOLOGY

7.2.1 Survey population

The survey population was all pre-registration tutors registered with the RPSGB for the 1993-94 training year. The RPSGB had kindly supplied addresses of all registered tutors from which a random sample of 500 were selected for the study. The sample size selected ensured that 55% of all tutors would be surveyed as there were a total of 908 tutors in the address database. At the beginning of the training year, approximately 900 tutors had attended RPSGB organised one-day induction seminars on competence-based training (109). The cost of a postal survey and reminders to non-respondents was the main reason precluding a survey to all tutors.

7.2.2 Pilot study

A pilot study was conducted initially to ensure that any questions used in a questionnaire would be valid, topical and cover most of the aspects of the training scheme from a tutors' perspective. A draft questionnaire was given for consideration to a community, hospital and industry-based tutor. A week after this, a semi-structured interview was conducted with each tutor for a thorough appraisal of the whole questionnaire. The interviews initially discussed the wording of each question or statement for clarity and where appropriate, changes were made. The draft questionnaire contained a core section for all tutors to respond to.

This was followed by individual sections for the three main branches on specific training issues. It was felt by the pilot group that the closed-question structure of the core section was suitable and be retained. The majority of these questions included a five-point Likert scale response offering a range of opinions e.g. strongly disagree/disagree/ neutral/ agree /strongly agree. The community pharmacy tutor felt there was no need for a final section specific to community practice as the core section of the questionnaire dealt with most of the necessary aspects. This tutor also felt that training was similar in all community pharmacies in that almost all tutors had constant interaction with and supervision of the trainee, which was not the case in other branches. Therefore, it would be of little value in having a community-specific section only to identify small differences from one community training scheme to another. As the majority of tutors were community-based and therefore possibly the largest respondent group, it was important not to make the questionnaire too lengthy and thereby reduce the response rate. The hospital and industrial pilot tutor, however, felt that a section for each branch was necessary in addition to the core questionnaire. They felt that the actual training system and supervision differed considerably from one hospital or industry to another and it would be necessary to evaluate these differences. These tutors concurred with the questions in this section being mainly of an 'open question' style which would allow the respondents to comment freely. The final questionnaire therefore contained a core section for all respondents followed by a hospital and industry-specific section for tutors from these branches.

7.2.3 The survey

Following the pilot study, a postal questionnaire were sent in January 1994 to a random sample of 500 pre-registration tutors registered for the 1993-94 training period. The questionnaires were sent with a reply-paid envelope and a covering letter explaining the objectives of the questionnaire. The random sample was generated from the list of all 908 registered pre-registration tutors for the 1993-94 training year supplied by the RPSGB. The random sample was generated using RANDGEN, a program written in Basic, designed by Professor Irwin of Aston University, Birmingham (149). This program generates a random sample of five-hundred numbers from 1 to 908, the total population size. The tutors on the address list were numbered according to the descending order they were listed in from 1 to 908. The assigned number corresponding to tutor name and address matching the number generated by RANDGEN was then selected for the survey.

A follow-up questionnaire was sent a month later for non-respondents to complete and return.

7.2.4 Questionnaire structure

The main or core section of the questionnaire was designed for tutors from all branches pharmacy. This initial section included profile and level of participation questions for which the tutor had to select a fixed response. A five-point Likert scale of responses was given for statements where a level of agreement or satisfaction was required. Two questions required the respondent to select as many pre-determined factors as felt appropriate and one question required ranking factors in order of preference.

The latter section of the questionnaire was specific for hospital and industry-based tutor respondents. Most of the questions in these sections required free comment as they were open questions. One question in the hospital tutors section required the ranking of factors in order of preference and one question in the industrial tutors' section required selection of as many factors as felt appropriate. A copy of the questionnaire used in this survey is in Appendix 4.

7.2.5 Analysis of results

The total usable 263 responses, were entered into a SPSS Data Entry II programme and then analysed using the SPSS/PC programme. This program has been described further on p.97 in the methods chapter. The statistical test employed was the chi-squared test which has been described on p.97-98. All results stated as significant are at a level of $p < 0.05$ unless a highly significant value of $p < 0.005$ is stated next to it.

The responses of all tutors were analysed with regard to the competence-based assessment which began in 1993-94 but only those who had been tutoring in the 1992-93 period were asked to respond to questions on the first registration examination introduced in that period. Each question which allowed free comment was analysed by collating tutor comments with the same message or theme after questionnaires were returned and entered into SPSS/DE as a numbered code.

7.2.5.1 Overall satisfaction or agreement value

All the statements requiring a response from a five-point Likert scale were worded as positive statements. This meant that for all these statements the response of very satisfied/satisfied or strongly agree/agree supported the positive statements. An overall satisfaction or agreement value can be calculated for statements of this nature. This is done by assigning the five responses a value of 1 for very dissatisfied/strongly disagree, 2 for dissatisfied/disagree, 3 for neutral, 4 for satisfied/agree and 5 for very satisfied/strongly agree.

For each statement, the number of respondents who chose each level of satisfaction or agreement response is multiplied by the corresponding value attached to that response. The multiplied totals for each statements' responses are added together and divided by the total number of respondents for that statement.

This yields a figure which represents an overall satisfaction or agreement level for that statement. The higher the figure, the greater the satisfaction or agreement to the statement because the statements were all positively worded. The value 3 is assigned to a neutral response it as it represents a mid-way opinion between satisfaction/agreement and dissatisfaction/disagreement. This method of analysis is cited in social research methodology (154).

7.3 RESULTS

7.3.1 Response rate

There were a total of 16 invalid questionnaires returned. The reasons for their return were because the tutor had not taken any trainees in 1993-4, the role of tutor had been given to some-one else within the work premises or because they had stopped tutoring permanently that year. Their name and address had not yet been removed from the list of pre-registration tutors maintained by the RPSGB. A total of 484 questionnaires were therefore regarded as the sample size for this study. There was a response from 263 tutors representing 54.3% of the total sample size used and 29% of the total population of tutors in that year.

7.3.2 Branch of pharmacy of respondents

Q1. 'In which branch of the profession do you act as a pre-registration tutor?'

Table 7.1 highlights a breakdown of the number of respondents based on the type of pharmacy.

Table 7.1. Number of tutors based on chain size or branch of pharmacy (n=263)

Branch/chain size	% of respondents
Independent community single	13
Community 2-10 pharmacies	7
Community 11-50 pharmacies	2
Community >50 pharmacies	42
Hospital pharmacy	31
Pharmaceutical industry	4.5
Academic tutor	0.5

Of all the respondents, 64% practised in community pharmacy. The number of respondents from each of the categories are shown graphically in Figure 7.1. The figure does not include the one academic tutor respondent.

7.3.3 Tutor experience

Q2. 'For how long have you been a pre-registration tutor?'

Table 7.2 show the percentage of respondents and years of experience as a tutor. The number of respondents and years of experience is graphically shown in Figure 7.2.

Table 7.2: The percentage of respondents based on years of experience as a pre-registration tutor (n=263)

Time	% of respondents
First Year	17
One Year	6.5
Between 2 and 5 Years	31.5
More than 5 years	45

A majority (76.5%) of respondents were very experienced and have been involved in the capacity of pre-registration tutor for more than two years. Of all the respondents, 62% of community (<50 pharmacies), 78% community (>50 pharmacies), 84% of hospital and 82% of industry-based respondents had been tutors for more than two years.

Figure 7.1: Number of tutor respondents from each branch

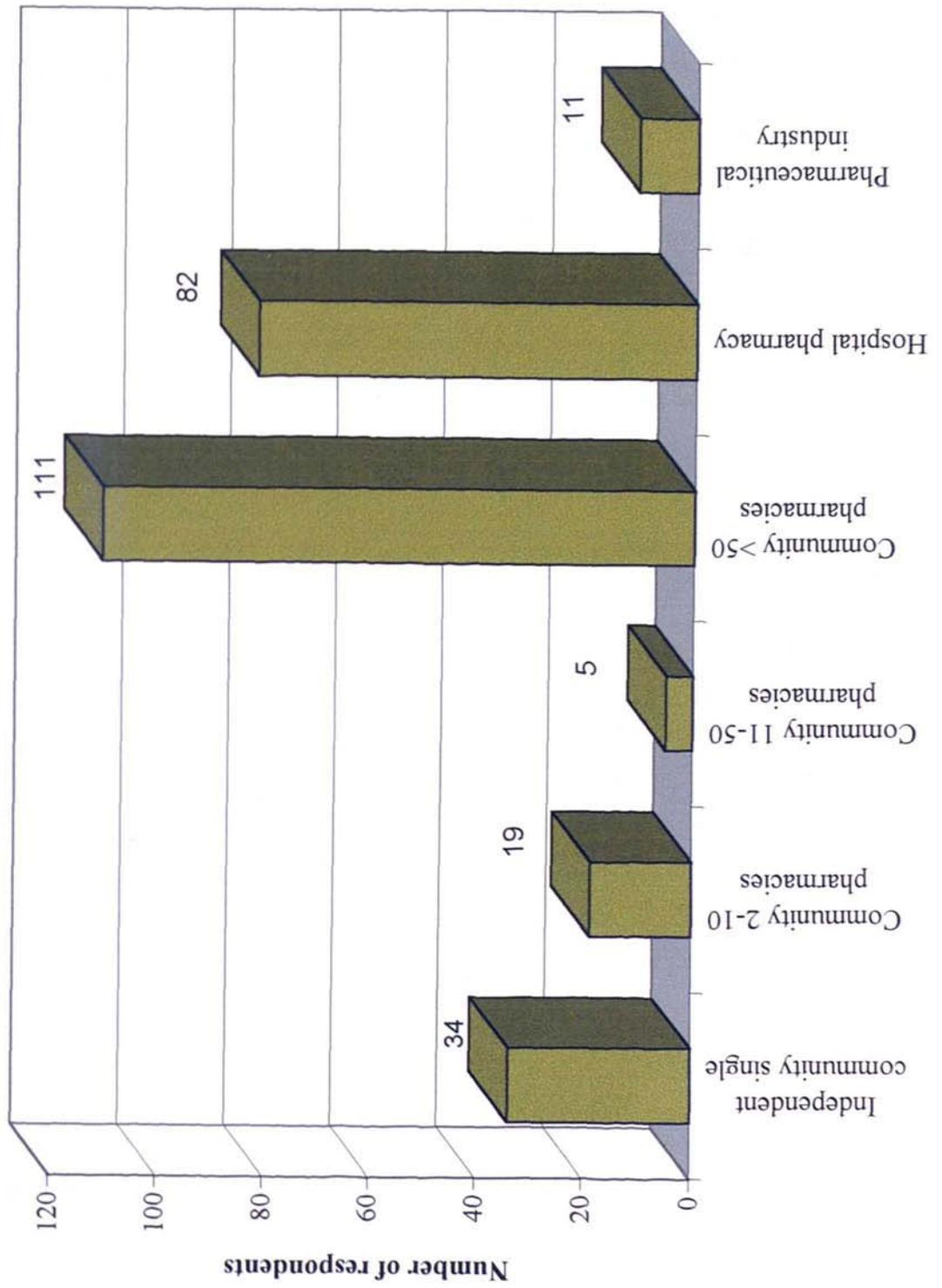
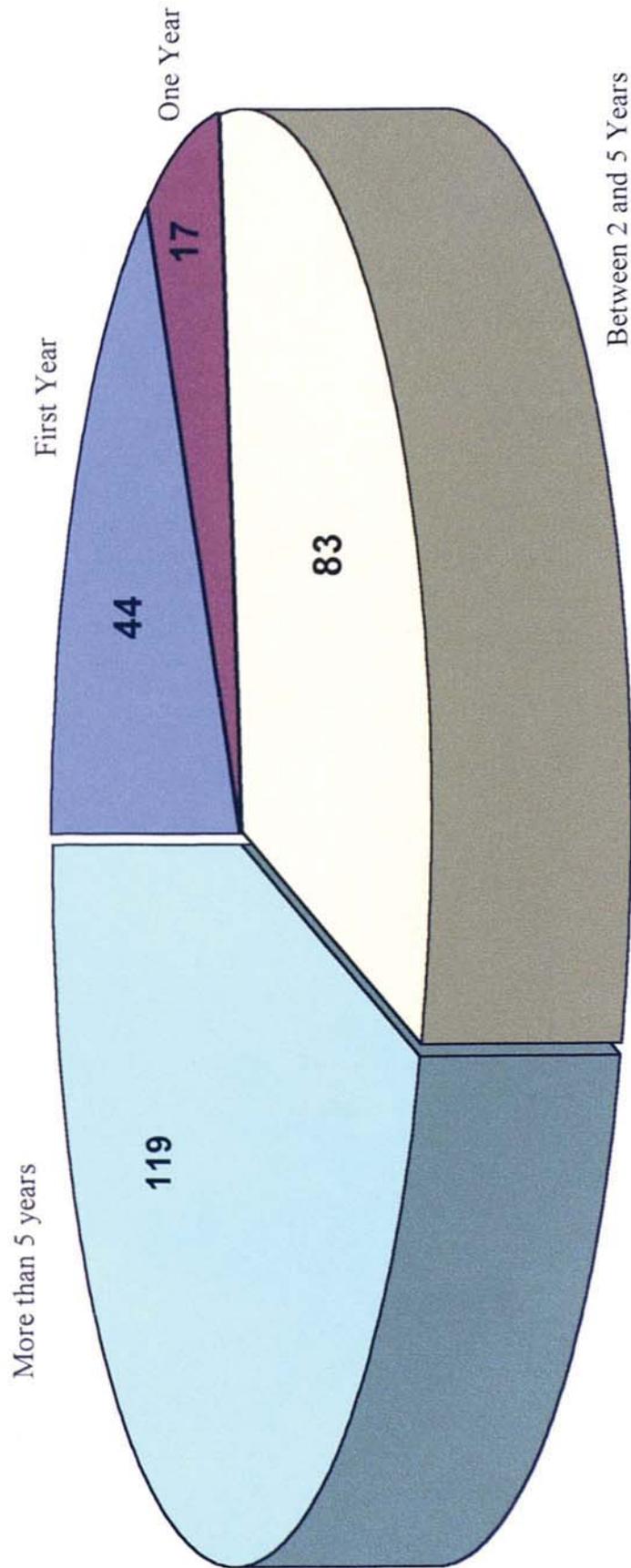


Figure 7.2: Number of respondents based on years of experience as a tutor



7.3.4 Information from the RPSGB on competence-based training and assessment

Q4. 'Please state your degree of satisfaction with the level of information that you received from the RPSGB this year (1993-94) with regard to the factors listed below.'

The respondents were asked to state their degree of satisfaction with statements on information received from the RPSGB on issues regarding the 1993-94 competence-based assessment year. As this was the first year of this format, it was essential that all tutors were fully aware of any changes required to the training year and their role. For each statement, the percentage of respondents and degree of satisfaction and calculated overall satisfaction value is shown in Table 7.3. The method of determining an overall satisfaction value is shown in section 7.2.5.1.

Table 7.3: Respondents' level of satisfaction and calculated overall satisfaction value for each statement on information received from the RPSGB on competence-based training for the 1993-94 year.

Information on competence-based assessment;	% of respondents			Overall satisfaction value
	Very dissatisfied/ Dissatisfied	Neutral	Very satisfied/ Satisfied	
The reasons for the introduction of the new competence-based training	19	16	65	3.52
The minimum amount of continuing education tutors should undertake	16	31	53	3.38
The support and advice available to deal with any problems associated with the trainee that affect quality of training	20	42	38	3.21
The structure of the new competence-based assessment	29	26	45	3.11
Specific changes in the training and testing necessary as a result of the competence-based testing	28	33	39	3.04
The subject areas of continuing education which tutors should undertake	26	43	31	2.99

These statements in Table 7.3 are in a descending order of their calculated overall satisfaction value. The reasons for introducing competence-based assessment had been well explained in general and 65% of all tutor respondents were satisfied with information received. A further analysis shows that 77% of community tutors (> 50 pharmacies) were satisfied with this information compared to 59% of community (< 50 pharmacies), 56% hospital and 46% industrial tutor respondents. The large-chain community tutors were clearly much more satisfied than smaller-chain/ single pharmacy and hospital tutors.

Of the hospital-based tutor respondents, 43% were satisfied with information given as to the amount of minimum education required by them in order to offer the best possible training compared to 62% of large-chain community respondents.

Only 34% of hospital and 41% of community (<50 pharmacies) tutor respondents were satisfied compared to 52% community (>50 pharmacies) and 64% of industry-based tutor respondents with information on the structural details of competence-based assessment.

Of all respondents, only 39% were satisfied with any information received from the RPSGB on precise changes required in both the training and testing necessitated by the new competence-based system.

SUMMARY POINT - 10

In general, a majority of tutors were satisfied with the reasons for introducing competence-based assessment. There was evidence to suggest that large-chain community tutors were more satisfied with information received on the reasons for introduction of competency testing and the structure of the new scheme. There was however a low level of satisfaction with the information received on specific changes required in training and subject areas for continuing education as a result of introducing competence-based assessment.

7.3.5 Information from the RPSGB on the pre-registration examination

Q4. 'Please state your degree of satisfaction with the level of information that you

received from the RPSGB this year (1993-94) with regard to the factors listed below.'

As with the previous section, the respondents were asked to state their level of satisfaction for statements on information received regarding the pre-registration examination. This was the second year since the examination had been introduced, and was therefore, better established than competency training. For each statement, the percentage of respondents and level of satisfaction and overall calculated satisfaction value (described in section 7.2.5.1) is shown in Table 7.4.

Table 7.4: Respondents' level of satisfaction and calculated overall satisfaction value for each statement on information received from the RPSGB on the pre-registration examination for the 1993-94 year.

Information on the pre-registration examination;	% of respondents			Overall satisfaction value
	Very dissatisfied/ Dissatisfied	Neutral	Very satisfied/ Satisfied	
The syllabus material for the examination	26	26	48	3.20
Changes made that are necessary in training as a result of the introduction of the examination	33	34	33	2.94
Emphasis on training in specific areas definitely covered in the examination	34	37	29	2.87
The consequences of the student failing the examination for both tutor and trainee	44	26	30	2.76

The statements have been placed in decreasing order of the calculated overall satisfaction value. The values for these statements indicate that most respondents did not express strong opinions on these statements. The results indicate satisfaction by 48% of all tutors to information received on syllabus material for the examination but a majority were unsatisfied or uncertain with this aspect. At this stage of the training year, 70% of respondents were either uncertain or dissatisfied with any information received on the consequences of their student failing the examination.

SUMMARY POINT – 11

The high neutral responses indicated that the tutor had little involvement in aspects of the examination. This was also shown by a mixed response to satisfaction with information on the examination syllabus or changes required to be made to the training as a result of the examination.

7.3.6 Changes in training after the introduction of the examination and competence-based assessment

Q5. 'Please state your level of agreement with the following statements that are associated with how certain aspects of the pre-registration year may have changed since the pre-registration examination was officially introduced in the 1992-3 year as compared to before this year.'

The introduction of a pre-registration examination and competence-based training and assessment over a two-year period has undoubtedly had a profound impact on the tutor. Several statements were designed to explore the extent to which tutors perceived these changes had affected them and their trainee. It is envisaged that the two changes made to training since 1992 will have increased the physical and intellectual demands on tutor and trainee. For example, a comparison of the training manual for 1992 and 1993 suggests that competence-based training will take more time and tutor preparation (103,104). The actual changes in the year as a result of competence-based training have been discussed in Chapter Two. It was also envisaged that with an increasing orientation towards assessment and examination in the year, the trainee would expect a higher quality of training before successful registration as a pharmacist. Only those respondents who were tutors previous to 1992 were asked to offer their agreement or disagreement to the statements, as they could compare the new format with the previous one. For each statement, the percentage of respondents and level of agreement and calculated overall agreement value (described in section 7.2.5.1) is shown in Table 7.5.

Table 7.5: Respondents' level of agreement and calculated overall agreement value for each statement on changes that may have occurred since the 1992-1993 training year. (n=197; 75% of total respondents)

Statements	% of respondents			Overall agreement value
	Strongly disagree/ Disagree	Neutral	Strongly agree/ Agree	
The role of a tutor requires much more time now to carry out duties effectively than it did previously	14	7	79	3.99
The continuing education demands on the tutor are significantly higher now	9	19	72	3.96
In order to gain maximum benefit from your pre-registration training, the continuing education demands on the student have significantly increased	10	17	73	3.86
The students' expectations of the quality of training provided is much higher now	10	28	62	3.62
The increase in your responsibilities as a tutor has compromised the quality of your training	50	30	20	2.69

The statements are placed in decreasing order of the calculated overall agreement value.

There was a significant difference between the number of tutors who strongly agreed/agreed (79%) and those who strongly disagreed/disagreed that much more time was required for carrying out training duties than it did in years previous to 1992. There was little difference in this response between tutors from different branches.

The results show a significant difference between number of respondents who strongly agreed/agreed and those who do not that continuing educational demands on them (72%) and their trainees (73%) were much higher since 1992. Of the single to small-chain respondents (<10 pharmacies), 76% strongly agreed or agreed there was now an increased continuing education demand on their trainee as did 77% of mid to large-chain community tutor respondents (>10 pharmacies). Similarly, 82% of single/small-chain and 85% of mid to large-chain community tutor respondents felt there was now a greater continuing education demand on themselves compared to 50% of hospital-based respondents.

A majority (62%) of all respondents agreed that since the examination was introduced, the trainee's expectation of the quality of training provided by tutors had increased. There was little difference in this opinion between tutors from different branches.

SUMMARY POINT – 12

There was clearly an increased time commitment and continuing education demand on the tutor for provision of pre-registration training since 1992. The tutors also perceived that their trainees had a higher expectation of the quality of training given since 1992.

7.3.7 Competence-based assessment and training

Q6. 'I am interested in determining your opinions on the new competency-based training.

Please state your level of agreement with the following statements.'

The introduction of an assessment of the professional competence of intending entrants in the 1993-4 training period to the pharmaceutical register by the Council was partially due to the success of a similar programme adopted in New Zealand in the mid-1980's and by non-pharmaceutical occupations in Britain (102). Competence is described as 'the ability to perform consistently to the required standard'. The new training programme was designed to assess those aspects which every newly-registered pharmacist must be expected to perform, together with experience specific to each sector of practice for which no assessment of competence was required (109).

Originally, it had been intended to introduce core competencies i.e. things that all trainees should be able to do at the end of the year, together with sectoral competencies i.e. things they should be able to do which are specific to the sector or sectors of practice in which they have trained. However, in 1993-94, only the core units of competence were introduced which would be assessed by community and hospital tutors (127). This meant that industry-based tutors in this study had no role in actual competence assessment. The competence-based training system has been further described in Chapter Two.

There was no evidence to suggest that tutors had been consulted by the RPSGB about the implementation of this new system other than participation by a few tutors in pilot studies to validate competencies. It was therefore considered important to ascertain tutor agreement or disagreement with statements on the introduction and appropriateness of competence-based training and assessment. For each statement, the percentage of respondents and agreement levels and calculated overall agreement value (described in section 7.2.5.1) is shown in Table 7.6. The responses for industry-based tutors have been omitted as they did not use competency-based training in 1993.

Table 7.6: Respondents' level of agreement to statements regarding the newly introduced competence-based training and assessment.

Statements	% of respondents			Overall agreement value
	Strongly Disagree / Disagree	Neutral	Strongly Agree / Agree	
It is possible to make an objective assessment of competency in a day-to-day work environment	11	12	77	3.83
The competence-based training is difficult to accomplish effectively due to time constraints in day-to-day work	20	22	58	3.69
The assessment of competency will allow you to make an accurate prediction of student's ability as a potential pharmacist	21	17	62	3.53
The competence-based training is the most appropriate method of assessing the skills which the student gains during your training	18	30	52	3.45
The competency-based training in your branch of pharmacy covers all of the skills necessary for the student to master before becoming a pharmacist	27	22	51	3.28
The criteria given in the training manual on testing competency are easy to understand and then accomplish	45	32	23	2.52

The statements have been placed in decreasing order of the calculated overall agreement value. There was a significant difference between the number of respondents who strongly agreed/agreed (77%) that it was possible to make an objective assessment of competence in a work environment compared to those who strongly disagreed/disagreed. Within the two branches, 82% of community and 66% of hospital tutor respondents strongly agreed/agreed to this statement.

Similarly, 71% of community tutor respondents strongly agreed/agreed that effective competence-based training was hindered by time constraints in day-to-day work compared to 52% of hospital respondents. This difference strongly suggests important differences in the training system within these two branches.

A majority (69%) of community tutor respondents agreed it was possible to make an accurate prediction of the trainee’s abilities as a potential pharmacist compared to an again lower 51% of hospital tutor respondents.

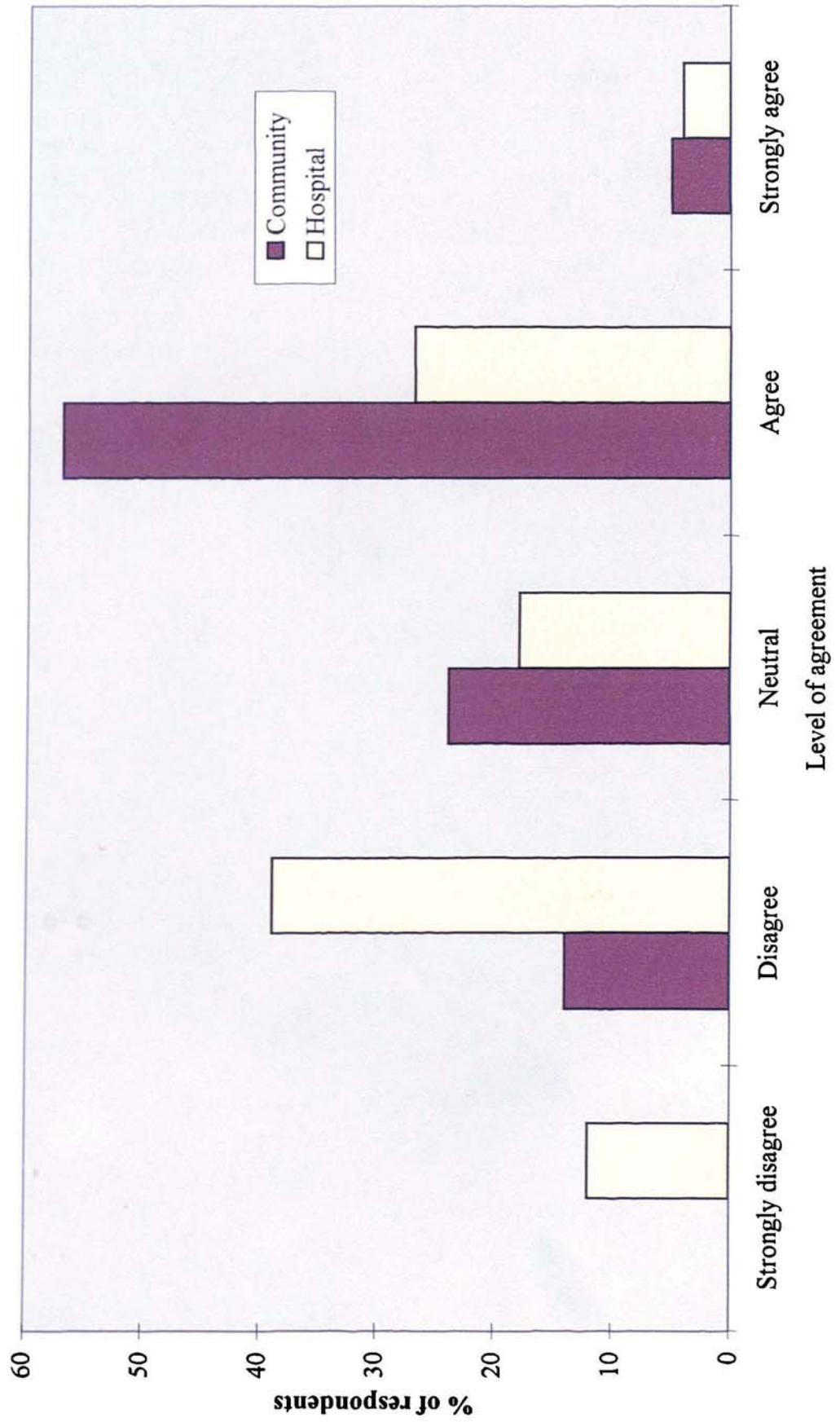
The results in Table 7.7 show the number of respondents from each branch for each of the five levels of response for the statement in Table 7.6 ‘*The competency-based training in your branch of pharmacy covers all of the skills necessary for the student to master before becoming a pharmacist*’. This statement was based on a reason for introducing this new training programme which was designed to assess those aspects which every newly-registered pharmacist must be expected to perform (109).

Table 7.7: Number of respondents from community and hospital pharmacy and level of agreement to the statement ‘The competency-based training in your branch of pharmacy covers all of the skills necessary for the student to master before becoming a pharmacist’.

Tutor Branch	Number of respondents					Total no. in branch
	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	
Community	0	24	40	96	8	168
Hospital	10	32	15	22	3	82

The percentage of respondents from each branch and each agreement response to this statement is graphically shown in Figure 7.3.

Figure 7.3: Community and hospital pharmacy tutor respondents' level of agreement to the statement regarding coverage of all necessary skills by competency.



The results show that tutors within community pharmacy show a much greater agreement (62%) that the new competency-based training and assessment covers all the skills necessary for a trainee to master for practice requirements. Of the hospital-based respondents, only 31% show an agreement response to this statement and 51% strongly disagree/disagree.

All the statements regarding competence-based training and assessment attracted lower agreement values from hospital tutors in comparison to their community counterparts. This suggests a fundamentally different approach to training in the hospital environment which will be discussed later.

SUMMARY POINT – 13

The responses to all the statements suggest differences in opinion on competence-based training and assessment between community and hospital pharmacy. In general, this new system had been better received by community-based tutors, who felt it was an effective format of skill assessment but difficult to carry out effectively due to time constraints. The bulk of hospital tutors disagreed that this form of training covered all the skills necessary in their sector.

7.3.8 Continuing education for tutors

Q8a. 'How much continuing education do you participate in?'

(this includes reading current pharmacy journals, distance-based learning, evening LPC and branch meetings, courses)

Currently, the Council of the RPSGB recommends that all pharmacists participate in 30 hours as a voluntary annual requirement for continuous education for pharmacists (199). However, those pharmacists wishing to act as tutors are required to furnish a declaration of their undertaking of at least 15 hours a year of continuing professional development, together with details of such (133). This declaration has to be submitted at the end of the trainee's year. The RPSGB directive ensuring compulsory tutor participation ensures that not only does the trainee receive up-to-date knowledge but will also be encouraged to pursue lifelong continuing education (CE). However, tutors may make the compulsory 15 hours their maximum annual participation, which may not be sufficient as all pharmacists are asked to voluntarily participate in 30 hours a year. In addition, there is no evidence to suggest that the compulsory directive of 15 hours has been set after an assessment of tutor's actual involvement in CE.

It was therefore important to ascertain the actual level of continuing education participation. Table 7.8 shows the number of respondents from the three main branches participating in hours per week of continuing education. The percentage of tutor respondents from each branch in each category is graphically shown in Figure 7.4.

Table 7.8: Number of tutors in each branch of training and hours per week of continuing education participation

Tutor Branch	Number of tutors and hours per week					
	0 hrs	0-1 hrs	1-3 hrs	3-5 hrs	5-10 hrs	>10 hrs
Community (n=169)	2	42	95	23	7	0
Hospital (n=82)	0	7	44	21	7	3
Industry (n=11)	0	3	3	4	1	0

Almost all (99%) respondents participated in 15 hours or more of continuing education in a year, and 79% participate in over 30 hours a year. The results show an extremely high level of CE participation by tutors.

7.3.9 Delivery of continuing education for tutors

Q8e. 'What order of priority would you give to these forms of continuing education with regards to giving you adequate training in order to provide the best pre-registration training possible. Please indicate priority by ranking them from 1 to 6 with 1 being the best possible form of delivery.'

The commitment to continuing education for tutors is absolutely essential as confirmed by the fact that at present, tutors are the only pharmacists who have to submit evidence of compulsory participation. Currently, there are a diversity of delivery methods of continuing education designed specifically for pharmacists. These methods and accompanying courses are essentially designed for self-improvement and updating of pharmaceutical knowledge. The pre-registration tutor however, requires continuing education both for the above reasons and for provision of a high quality of training. Clearly, they are a unique group of pharmacists who may require a different approach to continuing education. It is therefore important to evaluate which current format of continuing education delivery is the most suitable to this group. The survey listed five common forms of continuing education delivery for tutors to rank in preferential order.

Figure 7.4: Respondents' weekly hours of continuing education participation

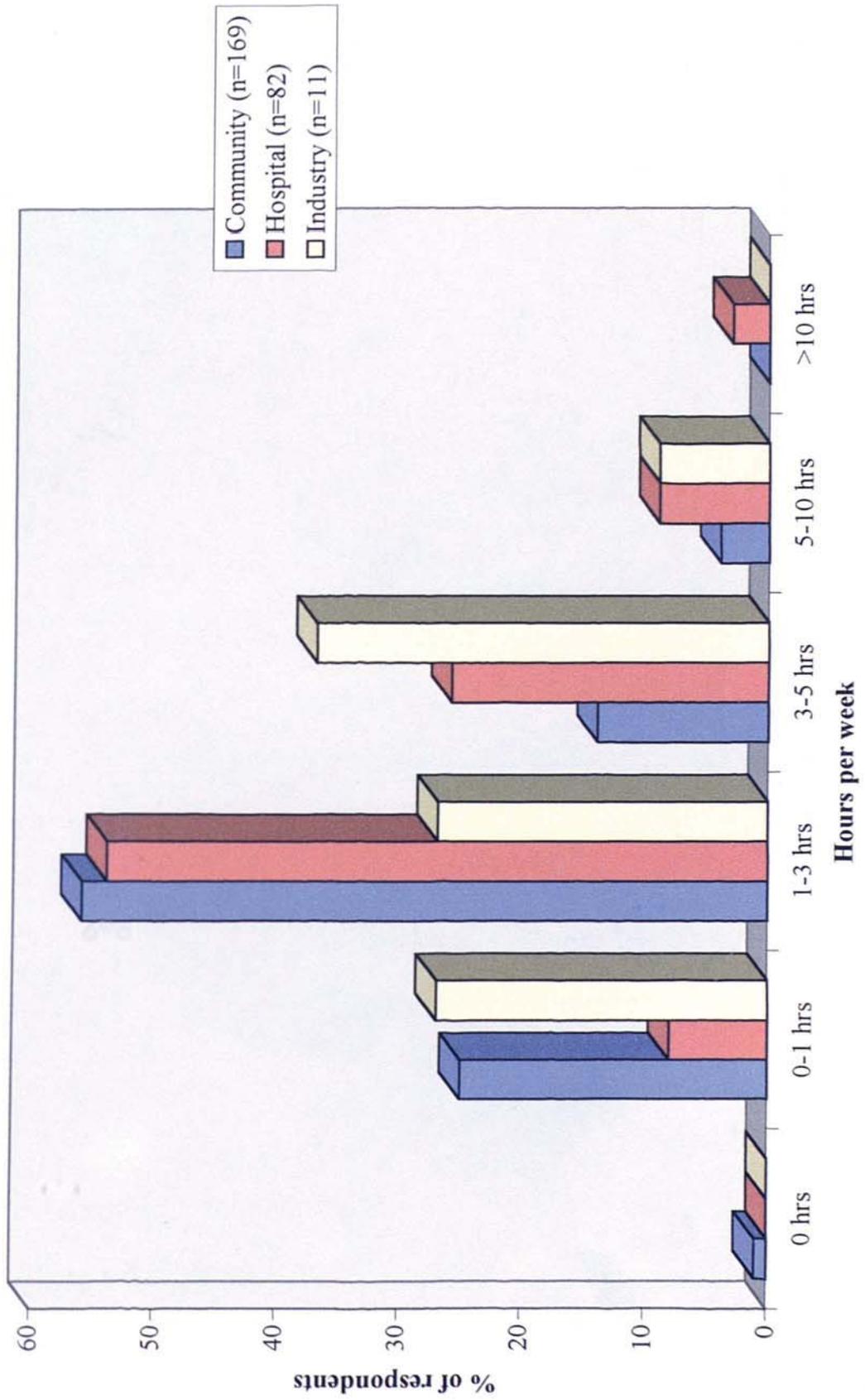


Table 7.9 shows the delivery methods, an overall rank order value for each method (calculated using rank order analysis described in Chapter Three) and the number of respondents who selected each delivery method as their highest preference. The inverse relationship between overall rank order and preference has been explained on p.98 in Chapter Three.

Table 7.9: The calculated overall rank order value for and number of respondents giving highest preference to each method of delivery of continuing education.

Delivery methods of continuing education	Rank Order Value	No. of Rank 1 respondents
Video packages based upon the OU system	2.430	92
Distant learning packs with no meetings	2.771	47
Distant learning packs with occasional meetings	2.915	52
Evening/Weekend meetings or courses	3.088	55
Computer packages (sent on compatible discs)	4.008	17

The most suitable form of continuing education delivery for tutor respondents in this study is the use of video packages based upon the Open University System. There were no differences in overall preference for this method between the three main branches of training. The OU system uses television as the medium for education delivery with formal assessment in the form of assignments and projects and examinations held at designated venues.

The use of distance-learning packs without accompanying meetings were more favoured than those where tutors would experience some interaction. The evening or weekend meetings and courses favoured by local branch meetings and specific interest groups attracted a low preference as did computer packages.

SUMMARY POINT – 14

There was a high participation of tutors in pharmacy continuing education. Video was the preferred delivery method for continuing education for tutors to provide the best possible training.

7.3.10 Level of academic preparation of trainees as perceived by tutors

Q10. 'How well prepared by their undergraduate course are your pre-registration students at the beginning of their pre-registration training with regard to the aspects listed below.'

The first group of pharmacists who have professional interaction with newly-graduated trainees are pre-registration tutors. The tutors has therefore the ability to judge the knowledge base a newly-graduated trainee brings into training. In particular, the knowledge base that will be directly applied in practice. The questionnaire offered a selection of responses describing varying extents of preparation for areas of knowledge directly related to practice and normally provided by the undergraduate course. Three of the knowledge areas, law and ethics, dispensing procedures and drug action and the patient were selected from the RPSGB accreditation guidelines which evaluate the provision of undergraduate education in all schools of pharmacy (18, 19, 20). All newly-graduated trainees are expected to have a sufficient level of knowledge and ability to put into application in these areas. The remaining knowledge areas were selected from the 1993-94 pre-registration training manual (104).

The area of 'counter prescribing and responding to symptoms' was in the sectoral checklist for community-based trainees and which they were expected to have some 'hands on' experience in. The remaining areas were covered in core competencies which all trainees would have to demonstrate an acceptable performance in. These areas were also chosen because the RPSGB accreditation guidelines indicated that all students should have an understanding of the pharmacist's role in these areas.

These areas therefore have an extremely important function in the working practice and professional development of a pharmacist. It was therefore expected that newly-graduated trainees would have some knowledge in these areas, but without the ability to apply them in practice.

The responses of industry-based tutors have been omitted as this training environment cannot ascertain preparation of the knowledge areas selected. The responses of hospital tutors have been omitted for 'counter prescribing and responding to symptoms' as they cannot offer a valid response for an activity based solely in community pharmacy. Table 7.10 shows the percentage of community and hospital-based respondents and their response to the level of preparation of trainees in their branch. The percentages are based on the total number of respondents from each branch.

Table 7.10: Community and hospital-based respondents' opinions on level of preparation of trainees by the undergraduate course in different subject areas. (Community n=169; Hospital n=82)

Key: c = % of community respondents (FIRST ROW)
h = % of hospital respondents (SECOND ROW)

Topics		Not prepared at all	Prepared to a little extent	Prepared to some extent but without the ability to put knowledge into practice	Prepared to some extent with ability to put some knowledge into practice	Very well prepared
Knowledge of Law and Ethics	C	1	16	33	42	8
	H	1	15	32	39	13
Dispensing procedures	C	4	22	28	41	5
	H	1	17	26	49	7
Prescription handling And reading	C	10	37	24	27	2
	H	2	20	39	35	4
Communication and advisory skills with other health care professionals	C	34	32	22	11	1
	H	18	46	24	9	3
Communication and advisory skills with patients	C	23	38	21	18	0
	H	21	39	23	15	2
Drug action and the patient	C	5	20	36	32	7
	H	1	29	36	29	5
Counter prescribing and responding to symptoms	C	30	40	19	10	1

There was a close similarity in opinion between tutors from both branches on level of academic preparation of the trainee in 'law and ethics' and 'dispensing procedures'. The majority of responses from both branches indicated that there was some preparation and ability to apply the knowledge in practice for these two areas. Although the majority of responses from both branches indicated that the trainee had some preparation in 'drug action and the patient' there was a fairly even divide between them having and not having the ability to apply this knowledge in practice. This was a similar trend in response for the area of 'prescription handling and reading'.

A majority of hospital (64%) and community (66%) tutor respondents indicated there was little or no preparation of the trainee in 'communication and advisory skills with other health care professionals'. Similarly, 60% of hospital and 61% of community tutor respondents felt there was little or no preparation of the trainee in 'communication skills with patients'. A majority (70%) of community tutor respondents indicated the course had either little or not prepared the trainee for 'counter prescribing and responding to symptoms'. In hindsight, it would have been better to ask tutors whether they had felt the trainee had a sufficient understanding of the pharmacists' role in these areas. These areas are based on practical application of knowledge and the responses offered for tutors to select did not distinguish between theoretical and practical preparation of the trainee by the undergraduate course.

SUMMARY POINT – 15

The results suggest that the undergraduate course provided sufficient preparation in three of the knowledge areas, law and ethics, dispensing procedures and drug action and the patient. These were selected from the RPSGB accreditation guidelines. However, the survey should have distinguished between academic and practical preparation for all the subject areas to provide better analysis and discussion.

The following sections of the study concentrate on the results of tutor respondents from hospital and industrial training. The majority of questions in the two sections were open questions. The respondents from the two branches were asked to freely write in their response which were analysed by placing similar comments or themes together.

HOSPITAL PRE-REGISTRATION TUTOR RESPONDENTS

The term 'trainer' had been given by the RPSGB to all those pharmacists who directly supervise pre-registration training (104). These include community locums and second pharmacists, hospital speciality and departmental pharmacy managers and industrial pharmacists in charge of a specialised function. However, for this study the questionnaire used the term 'assistant tutors' to describe those individuals who helped the registered tutor within each hospital training scheme.

7.3.11 Appointment of assistant tutors

Q1. 'What order of importance would you give these criteria that may be used to choose assistant tutors. Please indicate importance by ranking the following factors from 1 to 5 with 1 being of the greatest importance. Please state any other criteria of importance'

In addition to the hospital pharmacy services not being restricted to the dispensary, a number of hospitals will usually train more than one student. These issues necessitate the appointment of assistant tutors by the registered tutor to facilitate effective training. The questionnaire offered five factors that may be applied in the selection of an assistant tutor for ranking by the hospital tutors. The tutors were also allowed to write in any other criteria they felt had been important in the selection process.

Table 7.11 shows each factor and the calculated overall rank order value using the rank order analysis method (described in Chapter Three). The lower the value, the more important was its overall criteria for selection of an assistant tutor. The inverse relationship between overall rank order and importance has been explained on p.98 in Chapter Three.

Table 7.11: Overall rank order value of importance of each factor used to appoint assistant tutors (n=82).

Factors	Rank order value
Assistant tutor is the pharmacist specialist in that field	1.378
Assistant tutor has had previous experience of training	2.228
Years of experience in hospital pharmacy	3.095
Assistant tutor has a post-graduate qualification	3.455
Anyone who is available at the time	4.746

The preferred factor, chosen as first rank by 61 of the 82 respondents, was that the assistant tutor should be an expert in a particular speciality within hospital pharmacy. Previous training experience was the second most important consideration for selection of assistant tutors.

A number of other criteria were written in by some respondents as important for the selection of an assistant tutor, the most popular one was the importance for the tutor to be genuinely interested in the welfare of young pharmacists-to-be and willing to spend time with them. This theme was indicated by 14 out of a total of 27 written comments.

7.3.12 Method of feedback of information from assistant tutor to tutor

Q2. 'What method do the assistant tutors use to report back to you about student performance and how often?'

This was an open question. The most popular method, used by 50 of the 80 respondents (63%), was to have regular discussion sessions with the assistant tutors. This involved initial discussion on the method of supervision and areas of competence assessment and then to receive feedback on student performance before a 13-week appraisal. The appraisal would be then be carried out by either the assistant or tutor.

The second most popular method, chosen by 15 of the 80 respondents (19%), was a complete contrast to the first in that assistant tutors were given total authority to do their own competence assessments and 13-week appraisals. The comments indicated that the assistant(s) who had supervised the trainee in a 13-weekly period for the longest period would normally conduct the appraisal. However, most of these tutors had instructed their assistants to give them continuing feedback on trainee performance.

7.3.13 Training of assistant tutors

Q3. 'Have the assistant tutors been trained to do the competence-based assessment?'

This was an open question. The results show that 38 of the 82 respondents (44%) indicated that their assistant tutors had received no training of any kind. Two respondents stated that their assistants had received verbal training from them and another two stated that training was about to commence which would be conducted by regional training staff.

A total of 18 respondents (22%) specified the type of training their assistants had received to conduct competence-based assessment. Of these, 7 tutors had formally trained their assistants using their own initiative, 2 had sent their assistants to attend the RPSGB one-day course for tutors, 4 had sent theirs to attend a regional course, 2 had registered their assistants in a NVQ course on 'Training the trainers' and 3 tutors had sent their assistants to a course outside the hospital run by an educational expert. A further 12 tutors (15%) replied 'yes' but did not specify the nature of training their assistants had received. The remaining 14 tutors did not offer any response.

7.3.14 Complete view of hospital pharmacy

Q4. 'Do you feel that the student gets a complete view of hospital pharmacy at the end of their training?'

This was an open question. A majority (74%) of tutors indicated that their training program ensured that the trainee got a complete view of hospital pharmacy by the end of their training. Some of the respondents stated that they had their own training manuals in addition to the official RPSGB training manual which ensured that trainees covered all aspects of work in a hospital pharmacy. These included the hospital specialities not covered by the competence-based assessment.

7.3.15 Training manual

Q5. 'Do you feel that the pre-registration manual adequately covers all possible aspects of hospital training?'

This was an open question. A total of 32 of 78 respondents gave an unequivocal affirmative response to this question. The remainder of the responses varied, with 20 respondents indicating that many important specialist areas had been ignored in the core competency section of the manual. The more frequent examples offered were aseptic pharmacy, ward pharmacy and radiopharmacy. A total of 5 respondents stated that the manual was less detailed now and covered only general competencies, 6 respondents indicated that the clinical role had been poorly covered in the manual and 8 respondents stated that the manual did not cover all important elements but offered no reasons.

7.3.16 Inclusion of all important aspects in competence-based assessment

Q6. 'Do you feel that the competency assessment covers all possible aspects of hospital training?'

This was an open question. A total of 21 of 76 (28%) respondents offered an affirmative response to this question. A further 7 respondents (9%) indicated that although it did not include all aspects, enough was covered that was essential for pre-registration training. A total of 34 of 76 respondents (45%) indicated a similar theme to the question before that competence in some sectoral specialities which were now considered fundamental to a hospital pharmacist should be tested.

7.3.17 External experience

Q8. 'Do any of your students spend any time in community pharmacy during their training?'

This was an open question. Of the 82 respondents to this question, 88% of tutors ensured that their trainees spent a minimum period of one week in a community pharmacy with two reasons indicated most frequently. Firstly, to help them for the pre-registration examination and secondly, to enable them to be better prepared to work in community pharmacy in the future.

INDUSTRY PRE-REGISTRATION TUTOR RESPONDENTS

The final major section of the tutor study ascertained the opinions of the industrial tutors on their individual training systems and aspects of training unique to the pharmaceutical industry. The pre-registration training period in industry covers a period of six months. There were a total of 11 respondents from industry-based tutors.

7.3.18 The pre-registration examination

Q1. 'Do you feel the pre-registration examination covers those area appropriate to industrial training?'

This was an open question. A total of 5 of the 11 respondents indicated that their training had no place or offered no underpinning knowledge in an examination. One respondent felt that the examination did not recognise industrial training and three felt the examination questions were inappropriate for a trainee who had spent 50% of the year in this branch.

7.3.19 Achievable goals in industry training

Q4. 'Please tick those of the following factors you realistically plan to achieve within a six-month training period with pre-registration students.'

The trainee can only spend a maximum of six months training in the pharmaceutical industry. The training in this sector can therefore realistically achieve only a limited number of objectives. A selection of objectives were listed in the survey for industrial tutors to select as many as they felt would be realistically achieved. In hindsight, it would have been better to have offered a ranking system for these objectives. The RPSGB objective of training is to primarily give an awareness of the pharmacist's role in this sector.

The remaining objectives were chosen after consultation with the industry-based pilot group pharmacist. The number of respondents who selected each factor is shown in Table 7.12.

Table 7.12: The number of industry-based respondents who selected each factor as being realistically achievable within a six month training period.

Factors	No.of respondents (n=11)
An awareness of the pharmacist's role in pharmaceutical industry	11
To create an interest in industry so that trainee may choose it as their future career after training	10
For the trainee to work in only some specialised areas and obtain a good appreciation of those areas	7
For the student to spend some time in all of the possible areas within your industry	6
An obligation to the RPSGB to fulfil each year	5

All the industry-based respondents felt that the training would create an awareness of the pharmacist's role in industry. All but one respondents also selected the objective which was to create an interest in the trainee as a future branch of work as a pharmacist.

7.4 EVALUATION AND DISCUSSION

7.4.1 Branch of pharmacy and experience of respondents

The response from 263 tutors (54%) was encouraging particularly as this was a fairly lengthy questionnaire which may have taken considerable time to complete. The majority of respondents were from large-chain community pharmacy groups (>50 pharmacies), but overall, the community sector was represented by approximately two-thirds of all respondents. The single largest trainer of community pre-registration graduates, Boots the Chemists, had set a target of 275 places for the 1993-94 training year. This represented approximately 46% of all the graduates in community training for this year (200). However, the single independent community pharmacist tutors (13%) remain an important provider of training. The quality of training in independent community pharmacies will depend on the self-motivation and enthusiasm of the tutor who will also, quite possibly, be the proprietor. The independent sector can utilise several external facilities to facilitate their training. For example, the RPSGB provides a two-day course specifically designed for trainees from the independent sector or trainees can attend regional training or study days organised by health authorities (131, 201).

The hospital sector was represented by 31% of all respondents in this study. It has been reported that this sector has in recent years accounted for 35 to 40 per cent of the training places available, even though only 20 per cent of the profession practices in hospitals (200). This was an issue explored in Chapter Six, which showed that a proportion of hospital-trained pharmacists left this sector on completion of training.

This implies that some of the hospital tutors in this study;

- a) did not sufficiently encourage the trainee to remain in this sector after training.
- b) did not sufficiently highlight the merits of future practice in the hospital sector.
- c) trained with the knowledge that many of their trainees will never utilise the knowledge and skills given to them specific to this sector.

It must however be quite frustrating for hospital tutors to continue to lose a considerable number of trainees to other sectors. It would be interesting to assess whether there is a level of frustration on this aspect among hospital tutors. A radical solution, which would defeat the very ethos of pre-registration training, would be to re-design the whole year to provide only hospital-specific competencies. The trainee would then be highly hospital-orientated and may be reluctant to enter another sector on registration.

7.4.2 Information from the RPSGB on competence-based training/assessment and the pre-registration examination

(i) Competence-based training and assessment

As this was the first year of competency assessment, it was expected that the RPSGB had supplied tutors with some information on all aspects of this format of training. In addition, as this was the second year of the pre-registration examination, it was envisaged that tutors would have received information on this aspect based on feedback from the previous year and regarding development and structure for the current year. Both these elements of information would allow the trainee to have a better understanding of their trainee's requirements.

There was however a substantial difference in satisfaction between tutors from large-chain community groups and the other tutors on information received regarding reasons for introducing competence-based assessment. A larger proportion of large-chain community tutors were satisfied with the reasons.

It may suggest that tutors from large-chain community groups were given additional information from their employers which may be perceived as originating from the RPSGB. It may also imply that this group of tutors had been better prepared by their employers to conduct this form of assessment. This would make them more aware of its reasons for implementation.

The high level of training experience shown by these tutor respondents will be very useful in easing the facilitation of a new training system, but equally, emphasis on the importance of reasons for changing the previous training system has to be made precisely clear to all tutors. However, the literature shows that efforts were made by the RPSGB to inform tutors. A small group of tutors had been initially and successfully piloted with draft versions of the core competencies (127). In addition the Pharmaceutical Journal had since 1991 printed regular articles explaining the introduction, continuing development and structure of both the pre-registration examination and competence-based assessment (102,109,127). These should have increased their awareness of the reasons for introduction of the new system.

The 1993 training manual clearly states that proof of 15 hours of continuing education participation by all tutors must be sent to the RPSGB at the end of each training year (104), yet 47% of all tutors were either unaware or dissatisfied with information received on amount of continuing education required. From all the tutors, the large-chain community tutors showed the highest majority who expressed satisfaction with information received on this aspect. This again indicates that these tutors may have actually received additional information from their employers which is perceived as originating from the RPSGB. It also suggests that large-chain community employers have emphasised the necessity and amount of continuing education to their tutors.

The responses regarding information received on the structure of the new assessment system and information on the precise changes required in training as a result of the new system did not show distinctive satisfaction or dissatisfaction levels. One of the problems analysing these issues were the high proportion of responses offering a neutral opinion.

Only one-third of tutors from hospital (one-third also neutral) and approximately half from community pharmacy showed satisfaction with information received on the structure of the new assessment system. Similarly, only 38% of hospital and community tutor respondents expressed satisfaction with information received on the precise changes required in training as a result of the new system. In both cases, the largest satisfaction response was from tutors in large-chain community groups.

The pre-registration training manual given to tutors for the 1993-4 training year by the RPSGB was extremely comprehensive in details on the structure of competence assessment and clearly outlined all the areas to be assessed. There was also explanation on how tutors should best assess competency including advice on appropriate methods of assessment. It also offered handy tips on how to continually motivate and encourage the trainee even if they have shown a poor performance in a competency (104). In addition, the RPSGB had organised a one-day course for tutors to explain competence-based assessment in 1993, which over 900 tutors had attended (109). Despite the provision of the manual and course, the results show low levels of satisfaction on information received regarding the structure of competence-assessment and changes required to the training process.

It is difficult to understand this negative attitude of respondents from community and hospital practice on information received.

There may be several reasons for this;

- a) a possibility that the new system was complicated and required too large an organisational change by a tutor.
- b) The results may also suggest that tutors had not yet properly read and assimilated manual information, which would render the whole system useless.
- c) The most likely explanation is that the responses were naturally cautious as the system was new and respondents preferred not to pass judgement until it was better established.

A new training system, particularly based on competence, will take years for the tutors to develop as a means of accurately assessing the ability of a trainee to perform to a consistent standard. For example, the Pharmaceutical Society of New Zealand has operated a competence-based training programme for pre-registration graduates since 1985 (202).

In a presentation to the 1989 BPC in Keele, it was reported by a New Zealand pharmacist that the competency programme had so far made satisfactory progress, and, with additional funding, this format could still be developed its full potential (203). This indicates that this format requires continual improvement after inception before it can achieve its' true potential.

(ii) Pre-registration examination

Only half of all the respondents expressed satisfaction with information received from the RPSGB on the syllabus material. The remaining responses were equally divided between a neutral and dissatisfaction response. Yet, a syllabus for the examination was listed in the 1993-94 pre-registration training manual with a detailed list of topics (104). This suggests that some tutors had not studied this section of the manual. There was a fairly even divide of responses between dissatisfaction, neutrality and satisfaction on information received on changes necessary or areas of emphasis in training as a results of introducing the examination. The 1993 training manual did not offer any information regarding these two issues and this may explain the mixed responses. In hindsight, it would have been better to ascertain whether tutors wanted information about which practical areas could be emphasised during training that applied knowledge essential to the examination. The link between an increased ability to recall knowledge in the examination and daily application in training practice of that knowledge has been discussed in Chapter Five.

7.4.3 Changes in training since 1992

The introduction of competence-based assessment in 1993 coupled with the pre-registration examination in 1992 has brought two of the biggest structural changes to pre-registration training since its' inception. These two changes have not only increased the importance of the role of the pre-registration tutor but also, possibly, increased the intellectual and physical demands on both the tutor and trainee.

There was strong agreement by all respondents that much more time was now required to carry out training effectively. In addition to spending more time observing, testing and giving feedback for each competency, time will be also spent by community and hospital tutors/assistant tutors preparing for each competency assessment. This includes the reading and understanding of the assessment criteria for each competency in the manual.

More time will also be spent in writing the report on trainee performance in the 13-weekly appraisal forms to be sent to the RPSGB. This has been supported by a recent study of hospital pre-registration trainers (termed assistant tutors in present study) in the former Yorkshire health region. The main concern indicated by the trainers was the extra resources and time required for the competence-based training programme (129). Similarly, in a survey of Scottish tutors and trainees on aspects of supervision and training, Groundland *et al* acknowledged that competence-based training would increase the amount of time required for both assessment and training (204).

A clear majority of tutors from all branches agreed that the educational demands on the trainee were much higher now. This supports the consideration that pre-registration training is more intellectually demanding on the trainee since the changes were introduced. Only 50% of the hospital tutor respondents felt their own educational demands had increased in comparison to 84% of community tutor respondents. This difference may be due to hospital tutors not having as much day-to-day contact or supervision as a community tutor. The hospital tutor will have an overall supervisory role but much of the daily training will be conducted by assistant tutors. An increase, therefore, in educational demands should be experienced by assistant tutors.

The increase in educational demand on trainee will be mainly due to the examination. The tutor, and to some extent trainee, will experience increased educational requirements as a result of competence-based assessment. For the tutor, it will be vital that they have complete knowledge of all aspects related to a specific competency for them to be in a position to supervise, critically analyse and offer useful feedback to the trainee on their performance in that competency. For the trainee, it will be important that their knowledge base for each competency is sufficient for them to perform it to a consistent level and then be able to discuss it in the feedback with the tutor.

The respondents agreed that the trainees' expectations of the quality of training provided had increased since 1992 which was to be expected as trainees are now subjected to a system of increased assessment and examination in the year. These have combined to create a much greater obstacle to qualification as a pharmacist than previously.

The trainee will therefore expect the tutor and the training to offer sufficient knowledge and skills to ensure successful registration as a pharmacist. The increased expectation was shown at the 1993 BPSA conference where members called for a selection procedure and monitoring of tutors. The members felt that with the introduction of competency testing and examination, there was a greater emphasis on the role of the tutor who would require better training to ensure a trainee was successful (136). This increased expectation has also been shown in a recent report produced jointly by the BPSA and YPG. In this report, Mathur *et al* suggest that all tutors should have 30 hours certificated continuing education per year and should also attend and pass a 'training to train' course every five years (123).

7.4.4 Competence-based training and assessment

The introduction by the Council of the RPSGB of an assessment of the professional competence of intending entrants in the 1993-4 training period to the pharmaceutical register was partially due to the success of a similar programme adopted in New Zealand in the mid-1980's and by non-pharmaceutical occupations in Britain (102). Competence is described as 'the ability to perform consistently to the required standard'. A competence-based training programme defines the standards expected, which makes it easier for tutors to identify those areas in which performance is acceptable. The new training programme was designed to assess those aspects which every newly-registered pharmacist must be expected to perform, together with experience specific to each sector of practice for which no assessment of competence was required (109).

Although there is little argument about the merits and objectives proposed by the RPSGB on introducing this system, it is the tutor who had to implement the system and ensure that it was carried out successfully. It was therefore necessary to evaluate what they felt about the aims, objectives, appropriateness and practicalities of this system based on a few months of experience. This was done by ascertaining level of agreement to statements relating to these issues. The responses of industrial tutors were omitted as they did not conduct competence-based assessment.

As in the previous section, a larger proportion of community tutor respondents agreed with all the statements than hospital tutors. From the comments made by hospital tutors in the latter hospital-specific section of the questionnaire, the assistant tutors assessed the competency of the trainee. Therefore, the opinions of assistant tutors would have provided a more accurate response from the hospital sector on issues relating to competency.

A clear majority of community tutors (82%) and a smaller majority of hospital tutors (66%) agreed that it was possible to make an objective assessment of competency in a work environment. In other words, this form of training would identify the trainee's ability to consistently perform to an acceptable standard without prejudice. This is a major aim of competence-based training. The use of this form of training has also more recently been supported by a majority of hospital trainers (assistant tutors) from the previously mentioned study in the former Yorkshire region. The study found that competence-based training was a more structured and a fairer appraisal system than the previous system (129).

A comparison of the pre-registration manual before and after the introduction of competence-based training underlines the fact that this format of training may take more time to supervise, assess, review additional evidence from trainee and provide feedback. This was supported by the consideration that a significant majority of community tutors (71%) agreed that competence-based training was difficult to accomplish effectively due to time constraints imposed by other pharmacy work. It must therefore be considered whether it is realistic for a community-based tutor to dedicate sufficient time towards effective competence-based training. Overall, strong majorities of community tutors agreed that competence-based training and assessment gave an accurate prediction of trainee's future potential as a pharmacist, was the most appropriate method of skill assessment and covered all the skills necessary for the trainee to master before becoming a pharmacist.

The results suggest that based on a few months of experience in this system, tutors from the community sector were positive about the use of competence-based training in the provision of pre-registration training. The only concern was that within the first few months, this form of training was hindered by daily time constraints.

For all these statements, approximately half the hospital tutors offered an agreement response and again, in hindsight, the study should have included hospital assistant tutors which would have given a more accurate profile.

7.4.5 Continuing education (CE) of tutors

The reasons for ascertaining tutor involvement in CE have been described in the results section. There was a high level of participation among tutors, with a significant majority exceeding the annual recommendation of 30 hours of continuing professional development set for pharmacists on a voluntary basis (199). The tutors have to submit evidence of 15 hours of continuing professional development at the end of the training year and the results showed all but one tutor participating in more than 15 hours a year. Based on this evidence, the quantity of CE involvement by tutors is commendable and will set a good example to trainees. A more difficult criteria to measure is the quality of education. The measurement of hours of continuing education is a contentious issue and may not reflect the educational value of the process.

The pre-registration training process is highly documented and organised for the trainee. However, the tutors and trainers are left to educate themselves in a manner which relies on their own motivation or enthusiasm. If there is to be a consistent training process in all establishments, then uniform and possibly, compulsory, criteria for CE quality and quantity have to be set for all tutors and trainers. After all, the quality of the overall training process is initially determined by the quality of the tutors and trainers. For example, it is futile to have in-house high quality training courses for tutors in large chain community groups while an independent community pharmacy tutor has no such benefits. In 1994, the Steering Committee on Pharmacy Postgraduate Education (SCOPE) recommended the development of an enhanced training programme for pre-registration tutors, including coaching and mentoring skills which should be considered after a training needs analysis (205). This recommendation would ensure that the pre-registration training process is supervised by tutors and trainers who have received the same quality of training for this role. As the structure and objectives of the pre-registration year continue to be improved for trainees, it is imperative that attention is given to quality criteria and training of tutors.

The view has also been expressed by Taylor *et al* that, while education and continuing education are vitally important for pharmacists to assume their place in the health care team, pharmacists should be wary of convincing themselves that education alone is the vehicle to enhance and promote the profession. The pharmacists' professional skills as well as their personal experiences are also major determinants of the quality of service provided and should not be overlooked (206). This sentiment applies to the pre-registration tutor as well. Although it is vital that tutors maintain a high level of CE to provide up-to-date training, their accumulated experience, professional skills and attitude will also determine many of the future qualities of the trainee.

Although the present study did not assess the need for a postgraduate course specifically for the tutors and their training role, it assessed the preferred methods of delivery of continuing education for tutors to provide better training. These results could be extrapolated to provide the type of programme recommended by SCOPE. The preferred delivery method of continuing education, which is not commonly used in pharmacy, was by video packages based on the Open University system. In other words, this method could be accompanied by formal assessment. This format is also commonly used by management institutions for post-graduate courses and by the RPSGB. The RPSGB video packages are freely available to all UK pharmacists as an educational facility and can be borrowed from the Society's headquarters (207). The use of distance learning packs with no requirement of meetings was the second most preferred method by tutors. This format is also a convenient form of education delivery as it requires no external commitment for the participant. A variation of this format is to maintain the distance learning and self-assessment but combine it with a voluntary or compulsory requirement to meet with teachers at regular periods. This method was not highly preferred by tutors. However, it is an example of the CPPE format of continuing education, which accompanies distance-learning packages and self-completion assessment with voluntary attendance of workshops (208). The use of evening/weekend meetings showed a very low overall preference by these tutor respondents. These are usually offered by many pharmacy related institutions such as the UKCPA to their members. This method can contribute to a formal qualification and can incorporate additional forms of educational delivery (201).

It is obvious that tutors prefer delivery methods for a tutor-specific course where little or no interaction occurs with fellow tutors. However, it could be argued that tutors from different employers and branches should interact with each other to reduce the diversity of pre-registration training programmes. In particular, courses which improve training or mentoring skills would be more effective in an interactive environment.

The use of computer packages was regarded as the preferred method by only 17 respondents. In the past, the problems with this mode of delivery are that packages have needed to be compatible with a wide variety of common computer systems and users computer literate. However, nowadays, the majority of computers in pharmacy are IBM or Windows-based and CAL programs fairly easy to install and use.

The following recommendations should be considered;

- a) That there is a national pre-registration tutor course, as recommended by SCOPE, which provides tutors with training, communication and mentoring skills.
- b) That there is a definitive syllabus guideline of additional CE subject areas for tutors which would improve their knowledge base specifically for this role.
- c) That the national course incorporate interactive delivery methods, but the delivery of additional tutor-specific CE be delivered by Video packages.

The reason for including two sections in the survey specifically for hospital and industrial tutors partly arose from the fact that the training process occurs in a more diverse environment. The trainee in the community sector spends most of their training in a particular pharmacy and therefore mostly under the constant supervision of their tutor. However, in the hospital and industrial sector, the training period is designed to offer the trainee experience in different work specialities or divisions. The period of time spent in each speciality will be dictated by its relevant importance to training e.g. a longer period may be spent if it is related to a core competency.

7.4.6 Hospital tutors

The normal practice in hospital pharmacy, is for the tutors to appoint 'assistant tutors' to assist them in training supervision. The fact that several trainees acquire training in any one hospital coupled with the diverse nature of hospital specialities makes appointment of these assistants essential. It can be argued that the hospital 'assistant tutor' has a more important role than the tutor in pre-registration training. At the time of this study, it was envisaged that the 'assistant tutors' supervised and assessed competency, but, the tutor conducted the 13-weekly after feedback from their assistants. This section of the questionnaire was therefore designed to explore the appointment procedure, feedback mechanism and training of 'assistant tutors'. In addition, an overall view of hospital training was ascertained.

As the results suggested, the most important reason for selecting an 'assistant tutor' was because that pharmacist was the expert in a particular speciality within the hospital e.g. the dispensary. This is supported by a report in 1992 on how the North-West region of England was preparing for competency training which indicated that the majority of tutors in this area were district pharmaceutical officers but the trainers were senior pharmacists in charge of various departments or specialist placements (209). The trainee will spend most of the year with a number of pre-designated assistant tutors. The number of assistant tutors and nature of specialities depends on the size and type of hospital and the trainee can be under the tutelage of a wide variety and number of assistant tutors. However, only those assistants directly involved in the functions tested by competence-based assessment should be able to make an objective assessment of the trainee.

In a system where there are a number of assistant tutors involved in the training system, it is important that there is a system of feedback of information to the tutor. The method of feedback was one of the aspects ascertained. The majority of tutors indicated that there was regular discussion and feedback from assistant tutors. This usually involved initial discussion on methods of supervision and how competency was to be assessed. The results suggested that the main feedback occurred just before a 13-week appraisal which was then either conducted by the tutor or the assistant who had spent most of that 13-week period with the trainee.

However, a number of tutors gave complete authority to their 'assistant tutors' which empowered them to conduct both assessments and 13-week appraisals. However, these assistants were aware that they could discuss any training issues with the tutor at all times. This was in contrast to what had been envisaged when the study was carried out as it had been thought that the tutor conducted 13-week appraisals. However the training manual recommends that the tutor has the overall responsibility over the trainee and conducts the final appraisal. A majority of the responses indicated that the tutor did conduct the final appraisal which would indicate the trainee is competent to practice as a pharmacist. However, some of the final appraisals were conducted by assistants, underlining their important role.

In general, the results indicated a system of regular feedback from assistant to tutor. It is imperative that the tutor has a complete picture of each trainee they sign off as competent to practice as a pharmacist. If this does not occur, the tutor cannot sign off the final appraisal form with sufficient honesty about the ability of the trainee.

The results indicated that a number of 'assistant tutors' conducted competence-based assessment for the hospital trainee. However, at the time of this study, only a few tutors had provided training for their assistants to conduct competence-based assessment. A minority of tutors had exercised their own initiative by ensuring their assistants received some formal training. This issue was acknowledged as an area of implementation in a 1992 report on how the North-West of England was preparing for the new format of training. The report indicated that although provision of training for supervisors (assistant tutors) had to be planned, it was recognised that training was to be given on coaching, monitoring, assessing and giving feedback as well as an overview of competence-based training including the documentation. The training envisaged for these North-West trainers (assistant tutors) was probably a distance learning self-assessment package combined with a follow-up three to four day course. This could lead to a Training and Development Lead Body (TDLB) qualification as a work place assessor (209). A recommendation in the 1997 pre-registration training manual is for tutors and assistants to enrol on a NVQ 'Training for trainers' course which will help provide them with suitable training skills and understand competency (108). The view has been expressed that NVQ's can work because they represent the most practical and logical means of delivering vocational training (210).

Currently, the RPSGB organise a one-day course for all new tutors to explain the role of the year and the training manual. In addition, the training manual as discussed in Chapter Two, offers a detailed explanation of the principles and application of competency during the year. An important issue revealed in this study is the role and training of assistant tutors within the hospital sector. Although the training manual recognises the role of the assistant tutor (trainer), it is the tutor who is supposed to have a key role in training. However, as shown by the results, the extent of involvement of assistants in the training process necessitates their recognition as key personnel. This would imply that any policies affecting the quality, training or CE of tutors must also include the assistant tutors. From the results, the training of assistants was usually left to the motivation of the designated tutor for that hospital.

Any training given to assistant tutors for their role should;

- a) provide a better understanding of the concept, appropriateness and evaluation of skill assessment within a speciality.
- b) give an indication of the required restructuring in a speciality to provide the most appropriate environment for competency assessment.
- c) provide a better insight into the most appropriate method of supervision of and feedback to the trainee and tutor.

It is necessary to consider a follow-up study which would include 'assistant tutors' and assess the current type and level of training received for conducting and understanding competence-based training and assessment.

As described in Chapter Two, in addition to the core competencies for hospital trainees, there were areas of experience and information specific to hospital practice covered by the sectoral section in the 1993-94 training manual. Within this sectoral section, some hospital specific activities are recommended for hands-on experience and some knowledge-based only which can be covered by provision of information alone (104). The results suggested that some of the specialities or hospital specific activities from the hospital sectoral section of the training manual like ward pharmacy, clinical pharmacy and radiopharmacy had now become core functions in hospital pharmacy and that competency in them should be tested. Some of the opinions were based on the consideration that a newly-qualified pharmacist would be expected to perform these activities immediately after registration and therefore needed to be tested properly on these aspects during training.

A suggestion would be for hospitals to adopt an objective structured clinical examination (OSCE) technique to assess the important specialities included in the sectoral section of the manual. Instead of just ensuring that a trainee receives 'hand on' experience or information on these specialities, an OSCE would provide a formal assessment of ability. Other health professionals, such as medical practitioners, have found OSCE's to be the most appropriate method for measuring competency in clinical functions (211). The usefulness of OSCE as a method of assessing clinical competence of pre-registration trainees was tested in the South Thames (east) region where 28 trainees participated in the OSCE. Assessors were selected from clinical pharmacy practitioners and an experienced staff nurse. Candidates were assessed according to pre-defined checklists at a particular workstation. The workstations included assessment of taking drug history, retrieval of information from medical notes and counselling patients on use of devices. The checklists at each workstation comprised a task checklist reflecting components of the task to be performed, and a professional and technical competencies checklist reflecting the competencies allocated to the task from the RPSGB pre-registration training manual. The study showed OSCE to be a valid, reliable, feasible and acceptable way of measuring the clinical competence of trainees at the end of their pre-registration training (212). By adopting or modifying the OSCE format, the hospital training year could then provide competence-based assessment for the core competencies section of the training manual and assessment of some of the clinically-orientated areas in the sectoral section.

7.4.7 Industry-based tutors

The industrial tutors were asked whether the examination covered areas appropriate to their training. There were two reasons for asking this question;

- a) During the 1992-93 year, the first year of the examination, there had been numerous letters in the Pharmaceutical Journal from trainees and pharmacists suggesting that the examination favoured knowledge from community and hospital pharmacy.
- b) The examination was designed partly to test the ability to recall knowledge acquired in the training year. Therefore, this would include knowledge gained from a six-month period in industry.

The majority of tutors from this sector felt that the examination did not recognise the six months a trainee spent in industry. An important point raised here was that if the examination is perceived by tutors as not recognising the time and effort put in training by them and their trainees, this may reduce their motivation to continue providing pre-registration training.

The reducing number of industry training places has already been an issue of concern. In 1994, at a RPSGB Council meeting, the Education Committee agreed that action was needed to increase the number of pre-registration training placements within the pharmaceutical industry. The meeting acknowledged that over the previous two years, there had been a steep decline in the number of graduates undertaking training which incorporated a six-month industry placement (213).

The general consensus by industrial tutors was that their training was simply to create an awareness of the pharmacists' role in industry with a further hope that it created an interest in the trainee to pursue a career as a pharmacist in industry.

7.5 CONCLUSION

- The pre-registration tutors used for this study were a unique group as they were the first tutors to conduct competence-based training and assessment. The majority of tutors who responded to the survey represented large-chain community pharmacy employers who own more than 50 pharmacies.
- The tutors from large-chain community pharmacy groups expressed greater satisfaction with information received from the RPSGB on the reasons for introducing competence-based assessment and continuing education required to provide competency training. These tutors may have received additional information from their employers on these aspects, perceived to originate from the RPSGB. This implies that large-chain employers provide additional training, support and information for their tutors and trainees.
- There was a low number of responses indicating satisfaction on information received from the RPSGB regarding the structure of the new assessment system or the changes required in training due to the introduction of the system. A considerable number instead, expressed a neutral opinion. This was difficult to understand as the RPSGB had been publishing this information for all pharmacists to read since 1991. It is likely that tutors were being cautious with their opinion at this early stage of a new system.

- In general, the use of competence-based training and assessment was well received by tutors from the community sector. The responses from hospital tutors implied that the study should have included 'assistant tutors' from this sector, who may have provided more accurate opinions on the role and suitability of competency in hospital training. In many hospitals, it is the hospital 'assistant tutor' who carries out competence-based training and assessment.
- The main concern about competence-based training and assessment was the strong agreement, particularly from community tutors, that it was difficult to accomplish effectively due to time constraints caused by other day-to-day work duties. Unlike other sectors, the community tutor will usually have constant supervision and training responsibility for their trainee in addition to a host of other duties.
- The majority of tutors agreed that since the introduction of the examination and competence-based training, the continuing education demands had increased on the trainee. This would be a repercussion of the increasing level of assessment created in the training year.
- The majority of tutors indicated a high level of time commitment in continuing education, but the study did not ascertain the quality of this education. The preferred method of delivery of continuing education envisaged by tutors for providing better training was the use of Video packages in a format similar to the Open University system. This method is recommended for some future courses designed for tutors.
- The hospital 'assistant tutors' who were selected mainly as they were the expert pharmacist in a speciality had an extremely important role in supervision, assessment of competency and appraisal of trainees. The study suggests that they would have a greater daily interaction with the trainee and probably, a more important role in provision of training than the registered tutor. It is imperative therefore, that the hospital 'assistant tutor' receives adequate training, support and recognition for this role.
- The majority of industry-based tutors felt the knowledge imparted from their training was not recognised in a pre-registration examination. The major reason for providing training in this sector was to provide an awareness of the role of the pharmacist in the pharmaceutical industry.

CHAPTER 8

Survey of pharmacists in 1996 who registered to practice pharmacy in 1993.

This chapter describes the results of a self-completion postal survey of pharmacists who registered to practice in 1993. Prior to 1993, the bulk of this group had undertaken a three-year UK pharmacy course and one year of pre-registration training. The majority of the study population had been surveyed at the beginning and mid-way of their pre-registration training, described in Chapters Four and Five respectively. Approximately one-third of the study group had also been surveyed at the end of their training (Chapter Six).

The survey was designed to follow-up a group who had previously been surveyed about undergraduate education and pre-registration training. The present study would obtain opinions on these two issues but now from the perspective of a practising pharmacist. The study also provided an opportunity to gather information from these young pharmacists on their career, future aspirations and the pharmacy profession .

8.1 AIMS AND OBJECTIVES

8.1.1 Aims of the survey

The majority of the present study group had been surveyed in August 1992, shortly after commencing their pre-registration training. The 1992 survey had gathered information on the three-year undergraduate pharmacy course just completed and perceptions of the training year ahead. The majority of the present study group were then followed up at a mid-way stage of their pre-registration training in March/April 1993. The 1993 survey gathered information on the extent to which training had progressed and met the expectations of the study group. Following this, a survey in November 1993 of approximately one-third of the present study group, gathered information on the recently completed pre-registration training year and the first-ever pre-registration examination. The present study was therefore designed as the final component of the series of studies which commenced in 1992. The present study group had, since registration in 1993, been practising as pharmacists for three years.

There were several reasons for this study;

- a) The 1992 study had gathered information on the three-year pharmacy undergraduate course. One of the aims of the present study was therefore to obtain information on a similar theme to 1992, but for a four-year course. The four-year course had been officially introduced by the RPSGB in 1995 with the first intake for 1997.
- b) The information gathered in the 1992 study had been based on perceptions of future knowledge requirement as a pharmacist. The information gathered from the present study would be based on the current knowledge requirements of a practising pharmacist.
- c) The 1992 and 1993 studies had gathered information on pre-registration training based mainly on on-going experience of the training. The present study would therefore obtain a retrospective view of training based on the current requirements of a pharmacist.

In addition, the aim of the present study was to gather information on issues pertinent to the career and development of a group of young pharmacists who represent the future of the profession. These issues included extent of participation in continuing professional education, future career aspirations and future direction of the pharmacy profession.

8.1.2 Objectives

- To obtain a personal, work and educational profile of the respondents. This includes;
 - a) branch of pre-registration training
 - b) current work position
 - c) hours of work in a week
 - d) sex
 - e) ethnic origin
 - f) school of pharmacy attended.
- To determine opinion on the respondents feelings of current and future development of their career and of the profession of pharmacy.
- To identify the factors that would most improve the current working environment of respondents.
- To obtain views on changes needed in syllabus topics for a four-year course based upon their current knowledge of the requirements to work as a pharmacist.
- To determine their views on the extent to which the inclusion of several proposed structural changes to the training year might have provided a better pre-registration training.
- To ascertain participation in continuing education programs and assess usage of literature relevant to pharmacy.

8.2 METHODOLOGY

8.2.1 Survey population

The survey population comprised of all the individuals who had registered as pharmacists with the RPSGB to practice as pharmacists in 1993. The names and address of all the individuals representing this group were kindly supplied by the RPSGB. The address list provided contained 1003 pharmacists. It was then realised that the RPSGB address list did not include any Northern Ireland based pharmacists or individuals who may have since 1993, terminated their registration as UK pharmacists. In 1993, a total of 1081 graduates had actually registered with the RPSGB as pharmacists (214). A further 82 pharmacists on the list were excluded from the present study as they were practising pharmacy outside the UK.

However, the study group included a few pharmacists who registered in 1993 and were practising in the UK, but, may have studied pharmacy outside the UK. A total of 921 pharmacists from this population were surveyed. The study was carried out by means of a postal survey in October and November 1996, three years after registration as pharmacists.

8.2.1.1 Comparison of this present group with 1992 and 1993 studies

(i) August 1992 study (Chapter Four)

The 1992 study surveyed all pre-registration trainees who had registered with the RPSGB by August 1992 after undertaking a UK undergraduate course. The 1992 study did not include Bradford sandwich course students or those who had studied at Queen's University, Belfast and were undertaking training in Northern Ireland. Unlike the 1992 study, the present study included pharmacists who studied at Bradford University and graduated and registered in 1993. In addition, the present study included a very small number of pharmacists who did not undertake UK pre-registration training or education, but, registered with the RPSGB in 1993. A number of pre-registration trainees from the 1992 study failed both the first and resit pre-registration examination, emigrated or terminated RPSGB registration after completion of training. They are not included in the present study.

(ii) March/April 1993 study (Chapter Five)

The Easter 1993 study group of pre-registration trainees included Bradford students in the fourth year of their sandwich course. Other than that, the differences between the 1993 and present study group are similar to those stated above for the 1992 study.

(iii) November 1993 study (Chapter Six)

The November 1993 study group is very similar to the present study. The only difference in the present study is the exclusion of pharmacists who no longer maintain RPSGB registration or have emigrated since the November 1993 study.

8.2.2 Pilot study

Initially, a random sample of 10 pharmacists were used for a pilot study. Their names and addresses were picked by selecting the 100th individual from the address database. In a personalised letter to each, they were asked to be completely honest with their opinions about the questions in the survey and comment wherever necessary. A response was received from 8 individuals which provided useful structural comments and lead to changes in the wording of questions.

The overriding concern indicated by the pilot group was that the draft questionnaire included too many open questions which asked for philosophical comments. These were considered too time consuming. Unlike previous surveys, the draft questionnaire offered a four-point Likert scale for statements requiring a level of agreement response instead of a five-point one. It was felt that the middle or neutral response became a convenient choice for respondents who perhaps did not wish to spend more time formulating a definite opinion to a statement. A large frequency of middle responses had also made analysis difficult previously. A four-point Likert scale without a middle response would ensure that all statements received the full attention of a respondent before a response was chosen. Following the pilot responses, a number of changes were made to the draft questionnaire. One pilot respondent had commented on offering the respondents the choice of branch of branch based on full or part-time work which was adopted. All open questions were either removed or altered to closed ones. The draft questionnaire included some questions where a response had to be selected by ticking and some by circling a given answer. The questionnaire was redesigned to ease completion by requiring a tick in a response box for all questions. The amended questionnaire was then given to five practising pharmacists who had all been practising longer than three years. Their comments were used to make final changes to the questionnaire, particularly in the areas of the extended role and continuing education of pharmacists.

8.2.3 The survey

The number available for the study, including the pilot group of 10, was 921 pharmacists practising in the UK. As mentioned, RPSGB registered pharmacists living and working outside the UK were excluded from the study. This left a total valid sample size of 911 pharmacists to whom questionnaires were posted in October 1996. The questionnaires were posted with a covering letter explaining the nature of the study and a reply-paid envelope to return the completed questionnaire. A follow-up of non-respondents identified by a code number on each questionnaire was conducted three weeks after the original posting.

The follow-up was done by posting a covering letter reminding them of the study and a duplicate questionnaire and reply-paid envelope. The pharmacists were asked to respond as soon as possible, although the returned questionnaires were not analysed until January 1997, allowing approximately 3 months for their return.

8.2.4 Questionnaire structure

All the questions were closed questions requiring the respondent to select one or more responses from a menu style checklist. Closed questions were felt to be most appropriate due to the ease with which they can be answered and usefulness as an aid to increase response rate. One of the questions required respondents to rank items in order of preference. The number of ranking questions was kept to a minimum as the completion of such questions is known to be more cumbersome (158). The remaining questions were a combination of those requiring the respondents to tick a box corresponding to an appropriate response and those designed with a Likert scale whereby respondents were asked to agree or disagree with a statement along a four-point scale (i.e. strongly agree, agree, disagree, strongly disagree). A copy of the questionnaire used in this study is included in Appendix 5.

8.2.5 Questionnaire analysis

The total usable 558 responses, were entered into a SPSS Data Entry II programme and then analysed using the SPSS/PC programme. This program has been described further in the methods chapter. The statistical test employed was the chi-squared test which has been described on p.97-8. All results stated as significant are at a level of $p < 0.05$ unless a highly significant value of $p < 0.005$ is stated next to it.

8.3 RESULTS

8.3.1 Response rate

A total of 911 questionnaires were originally posted which included 328 males (36%) and 583 female (64%) pharmacists. This is similar to the 39% male and 61% female of the 952 sample size used in the 1992 survey in Chapter Four. A total of 20 questionnaires were sent back by the postal service or representatives of the named individual. Of these 11 were travelling abroad indefinitely, 6 had been sent to incorrect addresses and the named individual did not live or work there and 3 had been sent back unanswered with no explanation.

The total known valid sample size was therefore 891, from which there were 558 respondents representing a 63% response rate.

8.3.2 Branch of pre-registration training

Q1. 'In which area of pharmacy did you undertake your pre-registration training?'

Table 8.1 show the percentages and numbers of respondents based on the branch, community chain size or name where pre-registration training was undertaken in 1992-3. The percentages have been combined in Figure 8.1 to show the number of respondents undertaking pre-registration training in each branch(s) of pharmacy.

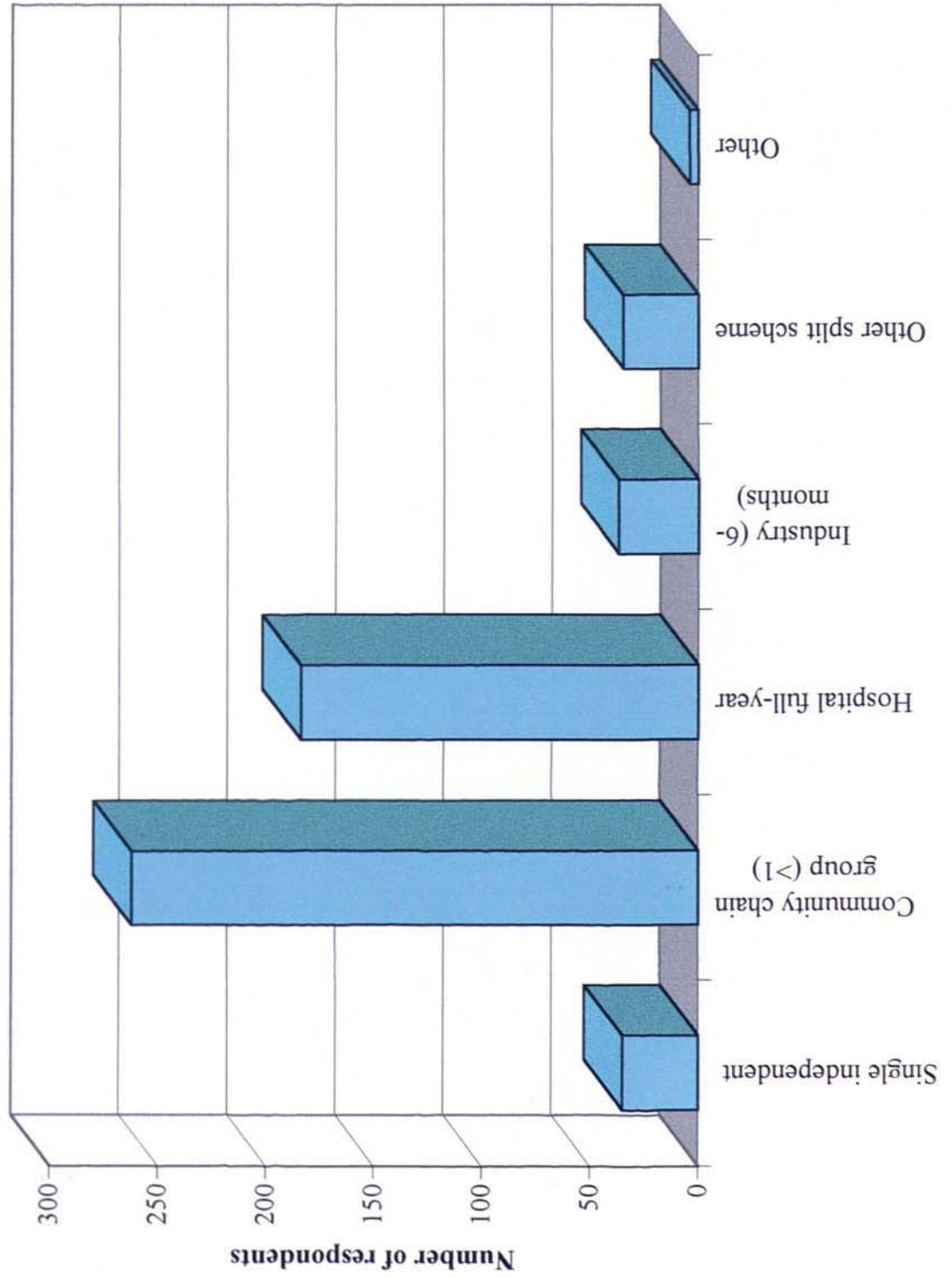
Table 8.1: The percentage and number of respondents in each branch category where pre-registration training was undertaken in 1992-93 (n=557).

Branch of pre-registration training	% of respondents	No. of respondents (n=557)
Single Community	6.3	35
Community chain (2-10 shops)	5.5	31
Community chain (11-50 shops)	2.3	13
Community chain (> 50 shops);		
Boots the Chemists	25.3	141
Lloyds Chemists	7.2	40
Safeways	1.8	10
NCC/CO-OP	1.2	7
Moss Chemists	0.7	4
Hills Chemists	0.4	2
Rowland and Co	0.4	2
Tescos	0.2	1
Unspecified	2	11
Hospital	33	184
Industry and Hospital	6.3	35
Industry and Community	0.4	2
Community and Hospital	6.3	35
Other	0.7	4

A majority (60%) undertook either six months or a full-year of training in community pharmacy, with 53% spending the full year in this branch. A total of 262 respondents (47%) undertook a full-year of training in a multiple community group (>1 pharmacy) with 218 (39%) of all respondents in large-chain community group (> 50 pharmacies). Of the latter group, 65% trained for Boots the Chemists.

A total of 254 respondents (46%) spent at least 6 months training in hospital practice of which 184 (33%) of all respondents spent the full year in this branch.

Figure 8.1: Respondents categorised by the branch(s) of pharmacy where training was undertaken in 1992-1993



8.3.3 Current branch and category of work

Q2. 'State in which area you are currently working and indicate if it is full or part-time (less than 35 hours a week).'

Table 8.2 shows the percentages and numbers of respondents based on the area of pharmacy work. Figure 8.2 shows the number of respondents working full-time in each branch. The multiple group pharmacy represents any employer with more than one pharmacy.

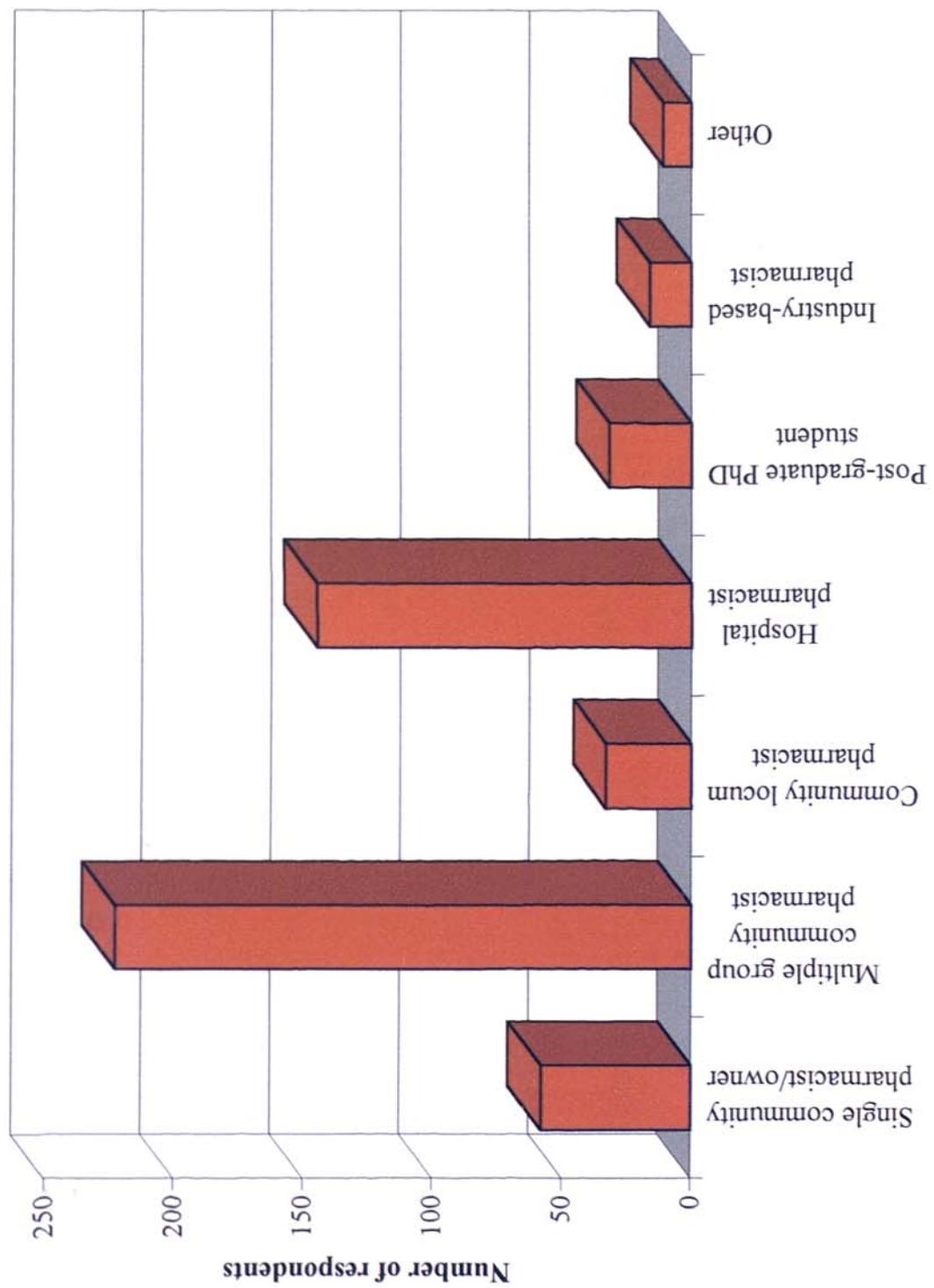
Table 8.2: The percentage and numbers of respondents in each current area/branch of pharmacy work (n=545).

Area of current work	% of respondents	Number of respondents
Pharmacy Manager/Pharmacist for a multiple community group	35.1	191
Hospital pharmacy	26.6	145
Manager/Pharmacist of single pharmacy	8.6	47
Community Locum pharmacist	6.1	33
Full-time Pharmacy post-graduate student e.g. PhD	5.9	32
Relief Pharmacist for a multiple community group	4.8	26
Pharmaceutical industry	2.9	16
Owner of community pharmacy	2	11
Area/District Pharmacist for multiple community group	1.1	6
Pharmacy Academia	0.6	3
Other	1.4	8
Part-time (<35hrs/week) community pharmacy	3.3	18
Part-time (<35hrs/week) hospital pharmacy	0.4	2
Part-time (<35hrs/week) other	1.2	7

A majority (61%) were working in community pharmacy. Of all the respondents, 44% were working in either a full or part-time capacity in the multiple community pharmacy sector, the most popular area of work. The hospital sector accounted for 27% of the respondent group, a fall from 46% who had spent either six months or the full year training in this branch. Of the 32 full-time postgraduate students, 24 also indicated that they worked part time as locums in community pharmacy.

The 'other' group included respondents as a prescribing adviser, research assistant, software developer, nurse and an MCA controller.

Figure 8.2: Respondents categorised by current area/branch of work



Of the hospital-based respondents, a majority of 67% were working as a C-grade pharmacists, 22% in position as A or B grades and 12% as D-grade pharmacists. The most frequent titles or positions stated for the hospital respondents were 'Clinical Services Pharmacist' (32%), 'Information Pharmacists' (10%), 'Resident Pharmacists' (7%) and 'Rotational Pharmacists' (5%). The remainder offered varied titles of work such as dispensary manager and psychiatrist pharmacist. Of the 16 industry-based respondents, 7 classified themselves as formulation scientists and 2 as regulatory affairs pharmacists.

8.3.3.1 Comparison of training and current work branch

Table 8.3 show the percentages of all respondents based on branch and category of pre-registration training and current pharmacy work. This comparison will highlight any important branch transitions of respondents from training to current practice.

Table 8.3: A comparison of respondent proportions in branch or category of pre-registration training in 1992-93 and current (1996) pharmacy work.

Pre-registration training branch	% of respondents		Current work branch/category
	Pre-registration training	Current work	
Single independent community	7	9	Manager/pharmacist single independent community
Multiple community group	47	44	Multiple group pharmacist (all posts)
Hospital	33	27	Hospital
		6	Community locum
Split schemes	13	3	Other
		3	Industry
		6	Full-time postgraduate
		2	Owner independent

The comparative results show that the hospital sector have lost a number of pharmacists who had undertaken a full-year of training in this branch. This number is even greater when it is considered that an additional 12% of respondents had undertaken six months of training in hospital pharmacy.

Overall, there has been an increase from 54% of respondents who undertook a full-year of training in community pharmacy to 61% who were working in this sector in 1996.

8.3.4 Hours of work

Q4. 'How many hours on average do you officially work each week?'

Table 8.4 shows the number of hours and percentage of respondents within different branches of pharmacy for the hours of work each week. The official hours would be described as the period spent during opening hours of a pharmacy and any additional time spent on aspects directly related to daily pharmacy duty. This may include delivery of medicines and paperwork but does not include continuing education periods. The pharmacists working part-time (<35 hours/week) have not been included in these results.

Table 8.4: The numbers and percentages of respondents in each branch category and official hours worked in a week.

Key:

1st row numbers: Numbers of respondents in each category

2nd row numbers: Percentage based on the total number of respondents in each work category

Pharmacist categories	Hours officially worked per week		
	35-38 hours	39-45 hours	>45 hours
Owner independent community	1 9%	4 36%	6 55%
Manager/pharmacist single community pharmacy	10 22%	26 56%	10 22%
Multiple community pharmacist employee	87 39%	113 51%	22 10%
Community locum	3 9%	16 49%	14 42%
Hospital pharmacist	28 20%	112 78%	3 2%
Industry pharmacist	10 67%	4 27%	1 6%

Although there are smaller numbers of community pharmacy owner respondents, they represented the highest percentage working longer than 45 hours per week. The second largest group working longer than 45 hours per week were the community locums. The majority of hospital and multiple community pharmacist respondents work between 39 and 45 hours per week. A majority of industrial pharmacists work a maximum of 38 hours a week.

8.3.5 Sex of respondents

Q17. 'Are you male or female?'

A total of 557 of 558 individuals responded to the question. The respondents comprised of 34% male (n=188) and 66% female (n=369) which is exactly the same proportion as the respondents in the 1992 Study in Chapter Four.

8.3.6 Ethnic origin of respondents

Q18. How would you describe your ethnic origin?'

Figure 8.3 show the number and percentage of respondents based on ethnic origin. The percentages of males and females based on ethnic origin shows strong similarity to the total percentage of respondents from each origin in Figure 8.3. For example, 77% of all females and 71% of all males are White, 12% of all females and 14% of all males are Indian and 2% female and 1% male are Black-Africans.

A comparison of branch of pharmacy work based on ethnic origin between the 1992 and present study has been described in Chapter 9.

8.3.7 School of pharmacy attended

Q19. Which school of pharmacy did you study in?'

The number of respondents and school representation is shown in Figure 8.4. There were two reasons for asking respondents to state the school of pharmacy they had attended. Firstly, to ascertain if all schools were represented in opinion on the undergraduate course and secondly, to exclude opinions on the undergraduate course of those respondents who had not studied a UK course.

With the exception of Queen's University in Belfast, there were respondents from all schools of pharmacy in the UK.

Figure 8.3: The percentage and number of respondents (end of each bar) based on ethnic origin

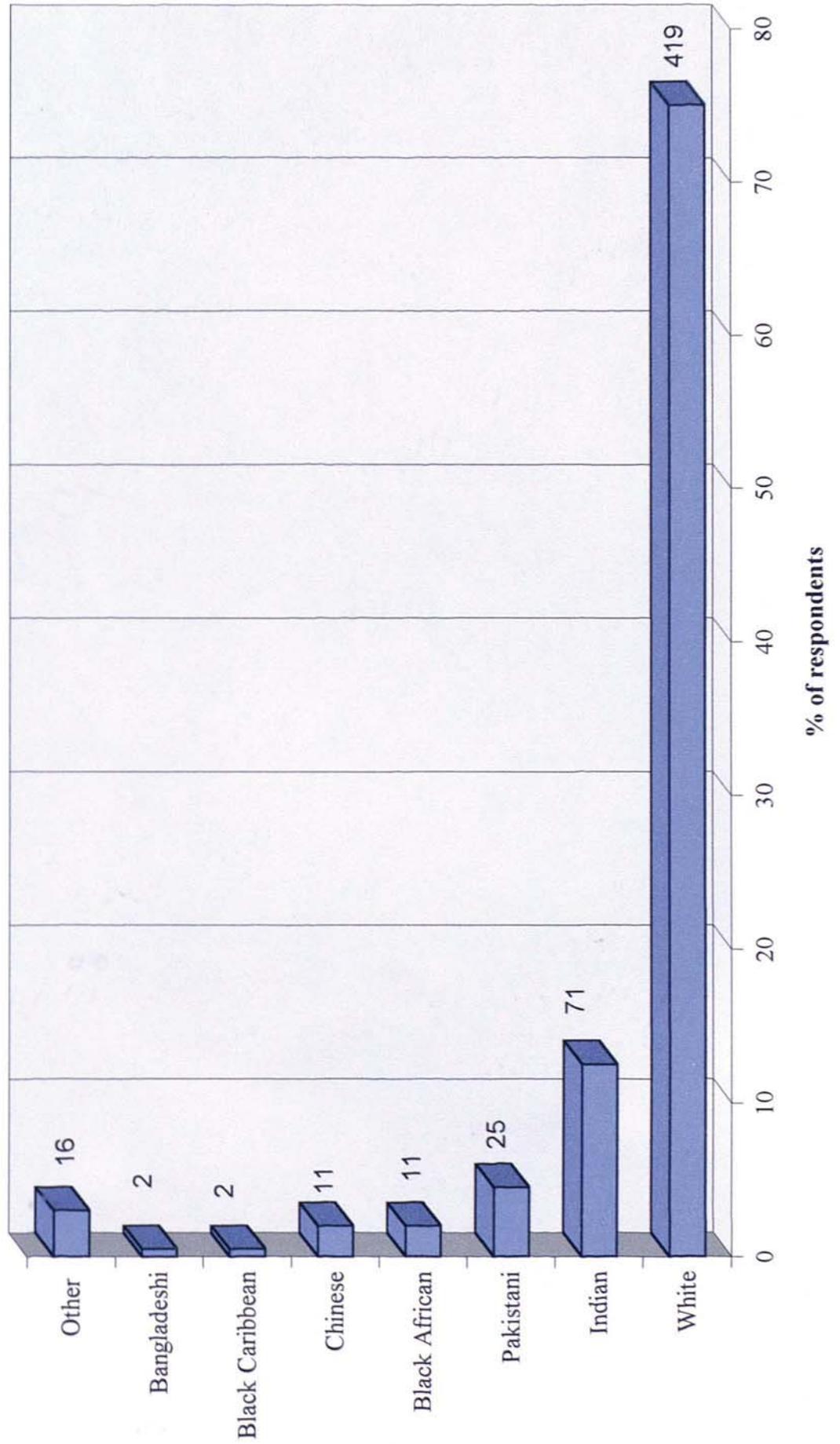
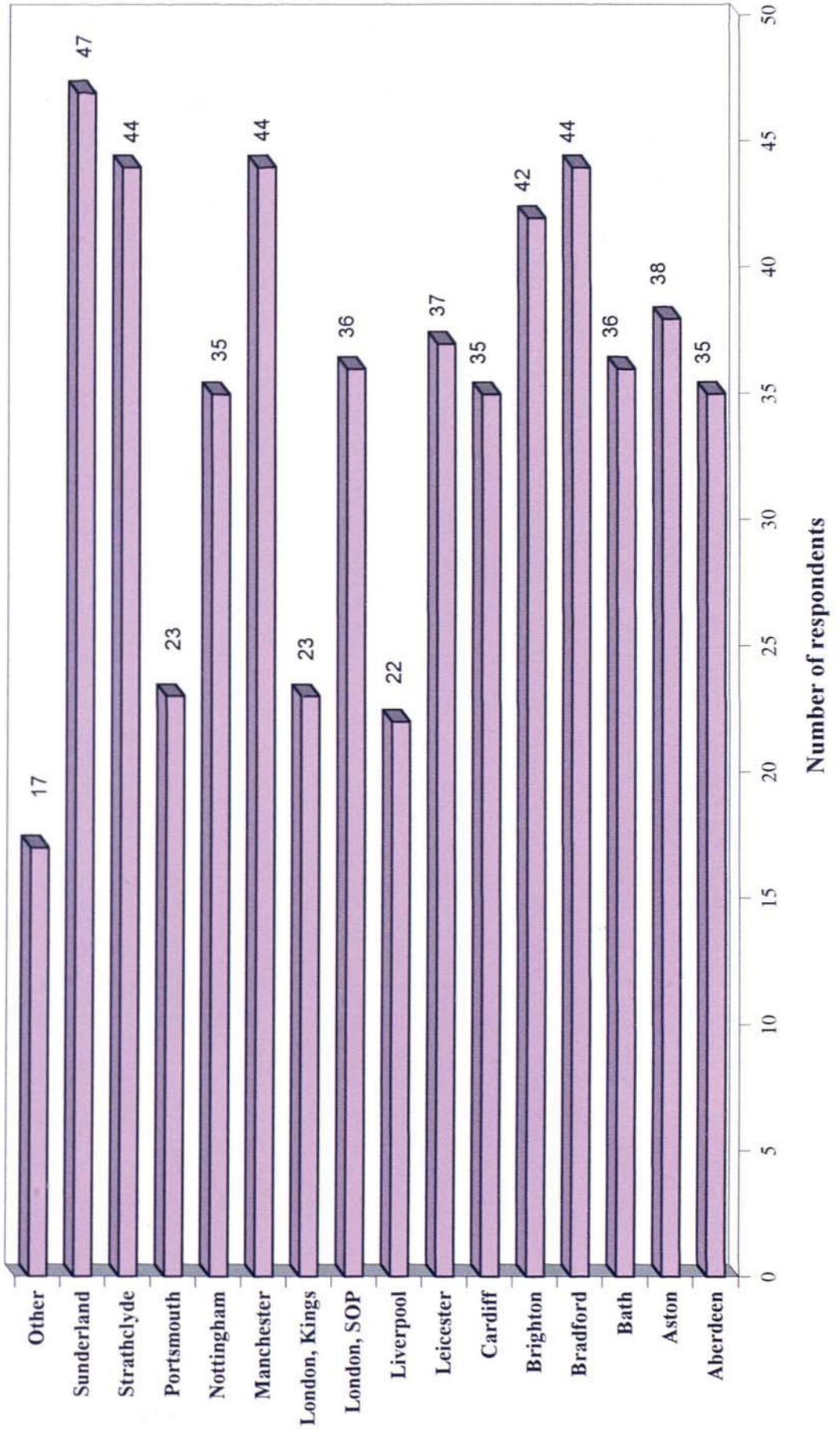


Figure 8.4: Number of respondents from each school of pharmacy attended



8.3.8 Attitudes to status and future development of current career

Q7. 'To what extent do you agree or disagree with the following statements in relation to your career?'

A response of strongly disagree, disagree, agree or strongly agree was sought on a selection of statements pertaining to the respondents current career and future development. These statements were based on issues that may directly affect daily work or the motivation of young pharmacists in a relatively early stage of their career.

8.3.8.1 Future development of career

When asked whether they wanted to be promoted from their current position to one with more responsibilities within the next two years, there was a significant difference between the number of respondents who strongly agreed/agreed (71%) and those who strongly disagree/disagreed. However, a smaller proportion (57%) agreed that they wanted to be continuously promoted every few years to positions of higher responsibility. There was little difference in these results between community, hospital and industry respondents. The results suggest that a majority of respondents envisaged their career to progress much further with increasing experience.

8.3.8.2 Opinion on public perception of pharmacist role

A majority of 64% of all respondents disagreed with the statement that they were happy with the public perception of their professional status as a pharmacist. When asked whether they were satisfied with the public's awareness of their role as a pharmacist, there was a significant difference between the number of respondents who strongly disagreed/disagreed (74%) and those who strongly agreed/agreed. There was little difference in these results between hospital and community respondents. The results suggest that these young pharmacists did not feel their role or status as a pharmacist was fully appreciated by the public.

8.3.8.3 Satisfaction with salary

Of all the respondents, a majority of hospital-based (66%) and industry-based (69%) pharmacist respondents agreed with the statement that they were satisfied with their current remuneration. However, only 48% of community pharmacist employees and 33% of community locum respondents agreed with this statement.

8.3.8.4 Challenges, demands and utilisation of professional knowledge

When asked whether their current work was boring and did not offer any new challenges, there was a significant difference between the number of respondents who strongly disagreed/disagreed (78%) and those who strongly agreed/agreed. However a clear majority of single community pharmacist (81%), multiple-group community pharmacist (73%) and community locum respondents (79%) agreed that their day-to-day work did not fully utilise their professional knowledge. In contrast, only 33% of hospital-based respondents expressed agreement to this statement.

SUMMARY POINT – 16

A large number of these pharmacists envisage further progression in their career with increasing experience. However, a strong majority of these pharmacists are dissatisfied with the public's awareness of their role as a pharmacist. Community pharmacists respondents are less satisfied with the salary they earn and evidence suggests that most of these community pharmacists feel their professional knowledge is under-utilised in their work environment.

8.3.9 Organisational changes with most potential of improving work environment

Q9. 'Rank in order of priority the impact of the following organisational changes upon your current work environment. Please select only SIX of the below and rank them in a descending order with rank 1 being the change that would most improve your work and 6 being the least.'

The respondents were given a wide selection of factors which could change the working environment of a pharmacist. All the organisational changes offered to respondents were perceived to represent improvements in a pharmacist's work environment. The respondents had to select six changes from the selection which they felt would most improve their work environment. The changes involving employment of support personnel were simply based on the premise that additional staff would give them freedom to pursue other pharmacy related roles. The changes involving training of staff, provision of breaks and better organisation of staff hours were based on concerns addressed by the RPSGB working party on the needs of employee pharmacists (215). The changes involving closer liaison with health professionals, including medical practitioners, were based on the premise that these liaisons would facilitate better patient care, prescription and medicine transfer and increase status of the pharmacist.

All the other changes were based on the fact that many posts advertising for pharmacists in the Pharmaceutical Journal offer them as incentives, which implies, that they create a better working environment. The results in Table 8.5 show the organisational changes, each overall rank order value and number of respondents who chose each factor as change that would most improve their work (i.e. Rank 1). The overall rank order value for each organisational change was calculated using the rank order analysis method described on p.98 in Chapter Three. The lower the overall rank order value, the greater its potential in improving the work environment of respondents. The inverse relationship between overall rank order and importance has been explained on p.98 in Chapter Three.

Table 8.5: Calculated overall rank order value for each organisational change and number of respondents selecting each change as having highest potential.

Organisational changes	Rank Order	No. of Rank 1 respondents
Employ another full-time pharmacist	2.137	84
Employ a part-time pharmacist	2.958	40
Closer liaison with local medical practitioners	2.959	88
Employ a dispensing technician/assistant	3.022	41
Better support from superiors	3.269	56
Closer liaison with other health professionals	3.569	26
Better training of support staff	3.597	35
Provision of adequate and regular breaks	3.625	31
Provide well defined criteria for in-house career progression	3.642	31
Better organisation of staff hours	3.800	16
Offer a work effort related monetary bonus	4.009	19
Less paper-work to do	4.010	24
Less management responsibility of staff	4.074	8

The organisational change that was considered to offer the greatest potential improvement in the work environment was to employ another full-time pharmacist.

The results can be discussed better if the ranking of changes from respondents from community and hospital pharmacy are analysed separately. This would provide an indication of those changes which would have most potential in improving the work environment specific to each branch.

8.3.9 (a) Community-based respondents

Figure 8.5 shows six organisational changes with the lowest calculated overall rank order values for community-based respondents. The higher the overall rank order value, the less the overall potential of the organisational change in improving the work environment.

The employment of another full-time pharmacist had the lowest overall rank order value and would therefore be considered as the change which would have most potential in improving the work environment of community pharmacist respondents. The employment of a part-time pharmacist had the second lowest calculated overall rank order value. This would be considered as the organisational change of second highest potential in improving the community work environment. Either of these changes would free community pharmacists from some of their current commitments to perform newer or extended pharmacy related roles.

8.3.9 (b) Hospital-based respondents

Figure 8.6 shows six organisational changes with the lowest calculated overall rank order values for hospital-based respondents. As with the community-based respondents, the employment of another full-time pharmacist had the lowest overall rank order value. This would therefore be considered as the change which would have most potential in improving the work environment of hospital pharmacist respondents. The employment of pharmacists or support staff were considered as organisational changes of the first, third and fourth highest potential in improving the hospital pharmacy environment. A better support from hospital superiors had the second lowest calculated overall rank order value. This would be considered as the organisational change of second highest potential in improving the hospital work environment.

SUMMARY POINT -17

For both community and hospital pharmacists, the employment of another full-time pharmacist was the organisational change with the highest potential of improving the work environment. For community pharmacists, the employment of a part-time pharmacist was considered a change with second highest potential. However, for the hospital pharmacists, a better support provision from superiors was considered an organisational change of second highest potential in improving the work environment. This implies that workload or limitations in work practice were considered the major problems.

Figure 8.5: The six organisational changes with the lowest calculated overall rank order values and therefore, highest potential of improving work environment of community pharmacist respondents (the lower the value, the higher the potential).

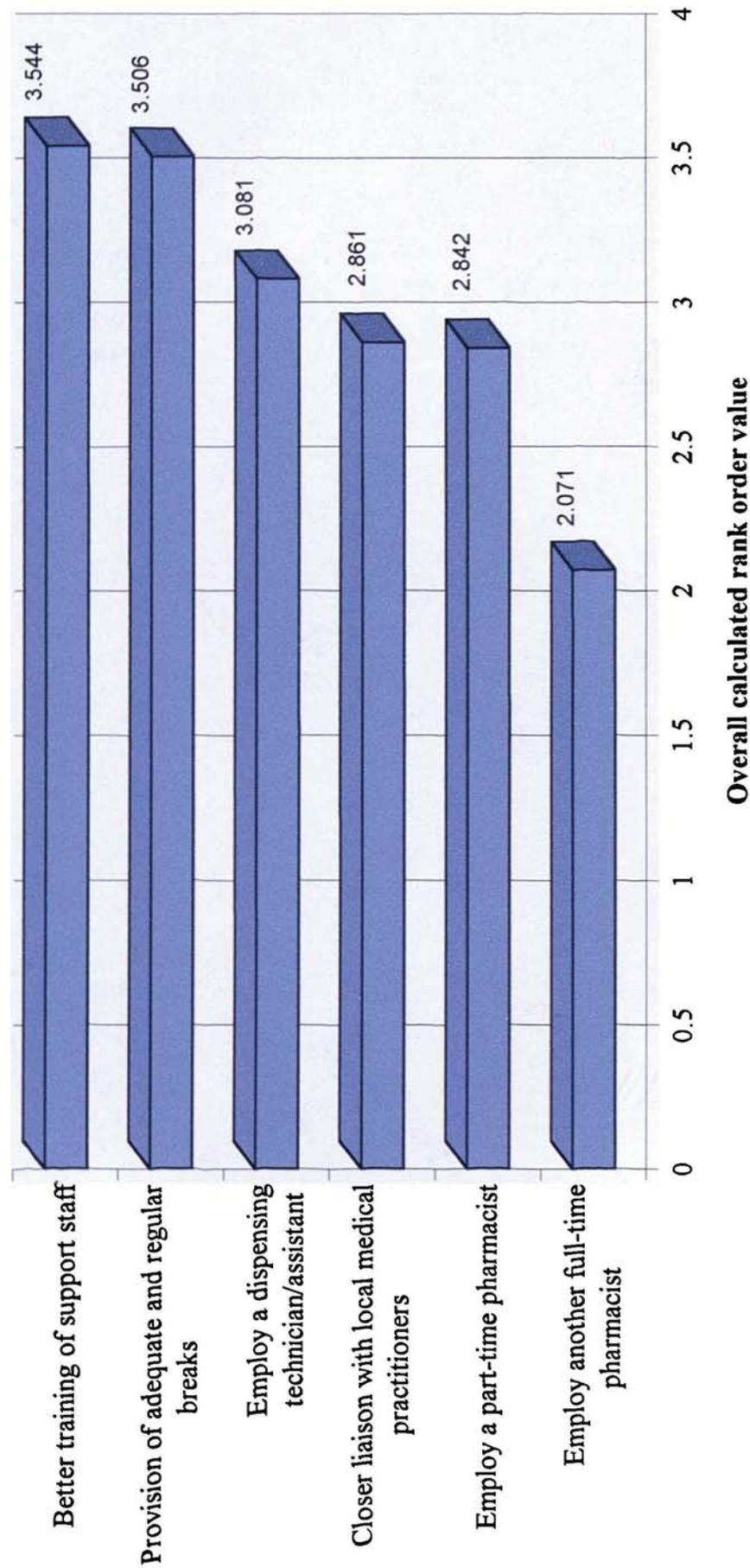
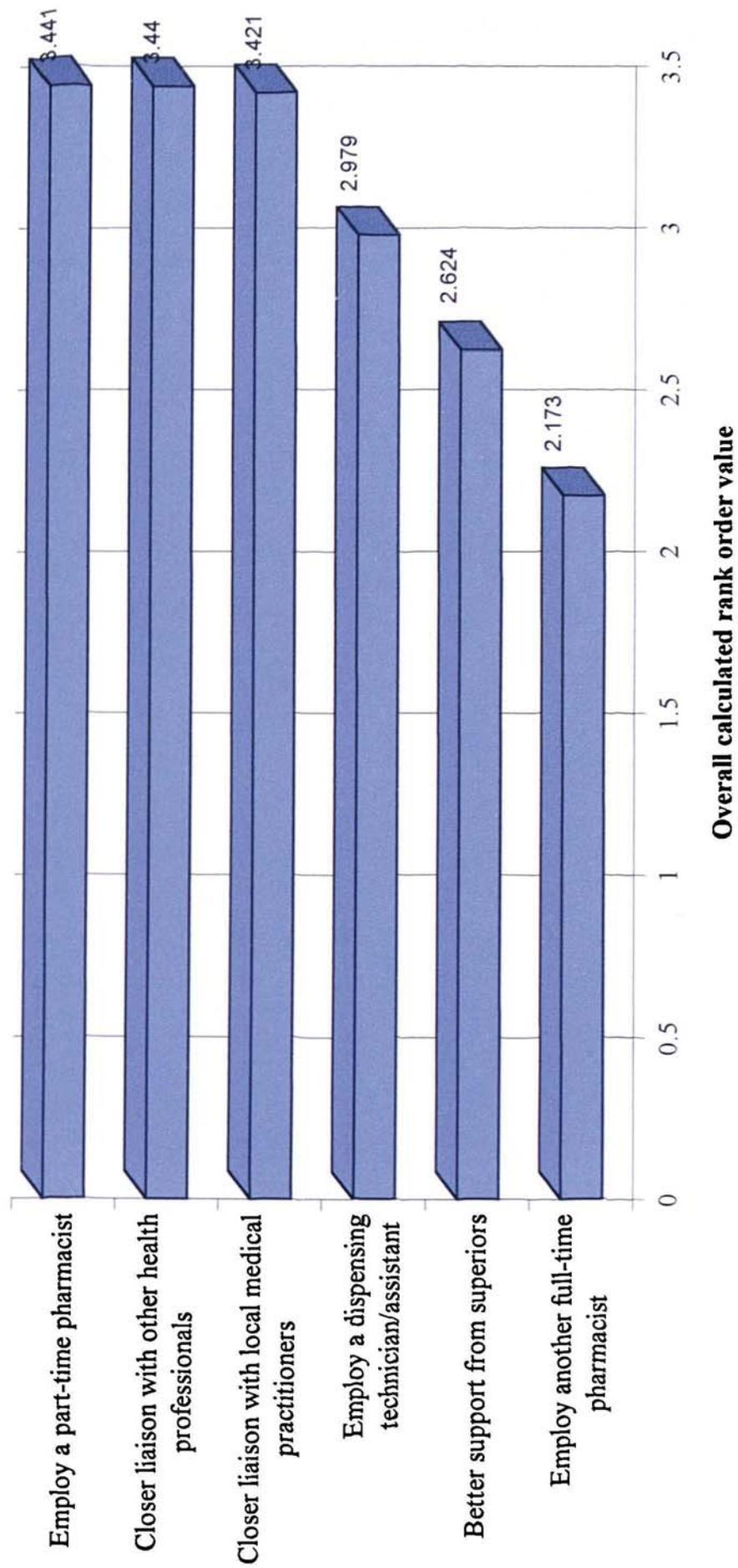


Figure 8.6: The six organisational changes with the lowest calculated overall rank order values and therefore, highest potential of improving work environment of hospital pharmacist respondents (the lower the value, the higher the potential).



8.3.10 Opinions on the future of pharmacy in the UK

Q8. 'To what extent do you agree or disagree with the following statements relating to pharmacy in the future in the UK?'

Figure 8.7 shows the percentage of respondents who either strongly agreed or agreed to the following statements for further clarification of results.

8.3.10.1 Pharmacy ownership and multiple community group expansion

Of the community pharmacy respondents, 96% agreed that it will be increasingly difficult for them to own an independent community pharmacy in the future. Of the community-based respondents, 55% of the employed pharmacists and all the pharmacy owner respondents agreed that the future of community pharmacy is threatened by continuous multiple pharmacy expansion.

8.3.10.2 Extended role of the pharmacist in the future

Of the community pharmacist respondents, 93% agreed that pharmacy as a profession cannot survive unless it establishes additional remunerable roles to the current ones. There was a highly significant ($p < 0.005$) difference between the number of respondents who strongly agreed/agreed (92%) and those who strongly disagreed/disagreed that the extending of professional roles will lead to greater recognition among all other health professionals.

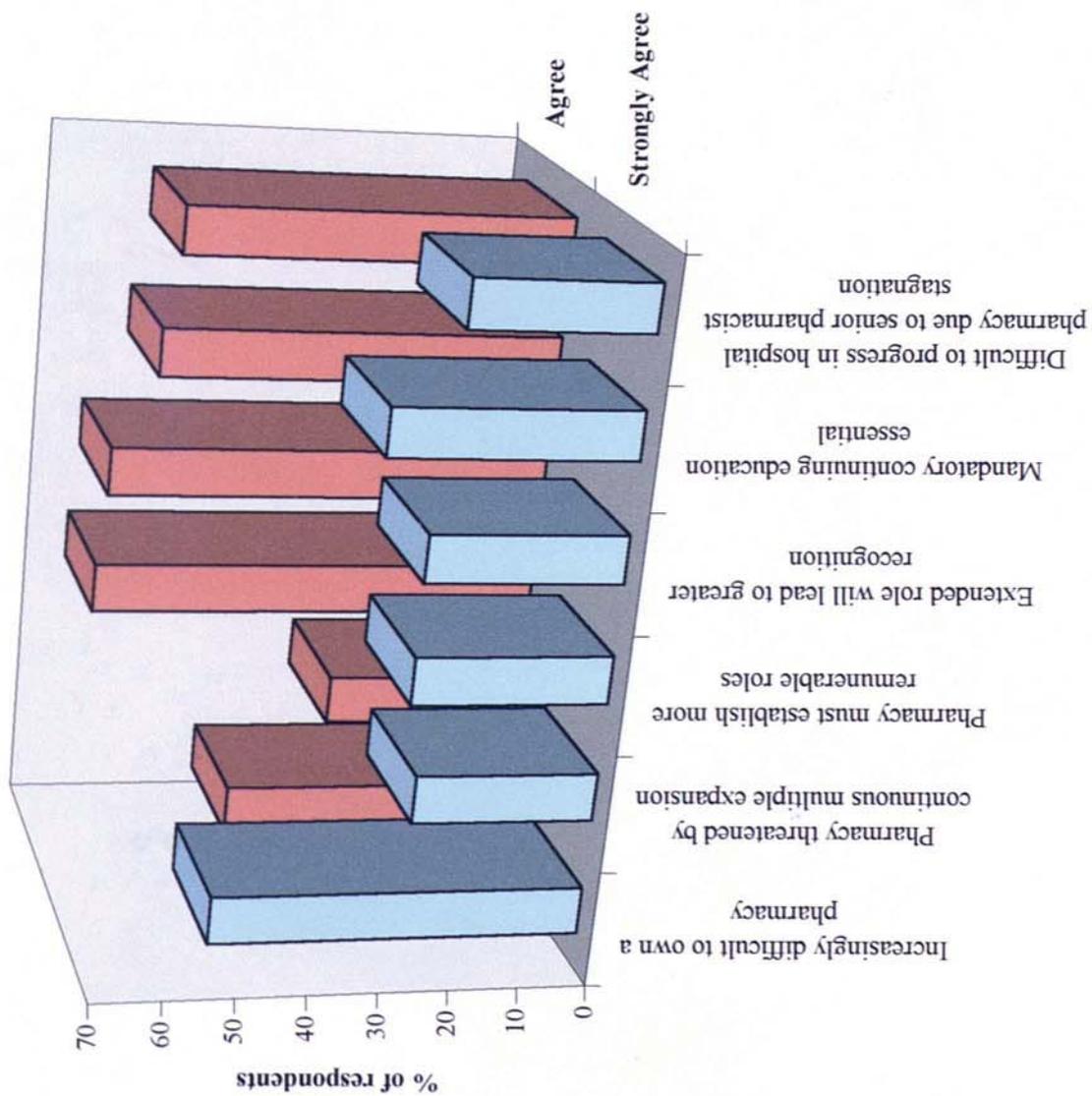
8.3.10.3 Introduction of mandatory education

There was a highly significant difference ($p < 0.005$) between the number of respondents who strongly agreed/agreed (93%) and those who strongly disagreed/disagreed that as the professional role of the pharmacist is widened, it is essential that mandatory continuing education is introduced.

8.3.10.4 Career progression of hospital-based respondents

There was a highly significant ($p < 0.005$) difference between the number of hospital pharmacy respondents who strongly agreed/agreed (82%) and those who strongly disagreed/disagreed that the prospects of progression within hospital pharmacy is more difficult for them due to stagnation of pharmacists in senior positions.

Figure 8.7: Percentage of respondents who strongly agree and agree to statements regarding the future of pharmacy in the UK



SUMMARY POINT – 18

The majority of community pharmacist respondents agreed that the possibility of owning a community pharmacy was becoming increasingly difficult. Many of the community pharmacists, including employees from the multiple chain sector, agreed that pharmacy was threatened by continuous multiple chain expansion. This also has important implications on independent pharmacy ownership and retention. There was a very strong agreement that the introduction of mandatory continuing education in pharmacy was essential as the professional role broadened.

8.3.11 Content of topics for a four-year course

Q12. 'Using the knowledge you feel you use regularly, never use, lack or require more of in your current job as a guide, should the following subjects be expanded, contracted or left unchanged in the new four-year undergraduate course?'

In August 1992, the study of pre-registration trainees, which had included the majority of the present study group, had gathered information regarding the three-year course which they had just completed. This study has been described in Chapter Four. Some of the important results were discussed by extrapolating them for consideration in an extended course. In 1995, the RPSGB formally announced the extension of the undergraduate pharmacy course to four years with the first intake in 1997 (58). Therefore, there were two primary differences between this study group and the one in 1992. Firstly, the opinions of this group on change in syllabus topics would be based on knowledge requirements of a practising pharmacist, and not perceptions based on future requirements as in the 1992 study. Secondly, the study was designed for the opinions to be ascertained and discussed for a definitely implemented four-year course.

The respondents were asked to give their opinion on whether a wide variety of pharmacy topics should be expanded, contracted or left unchanged in a four-year course. A support for expansion of a topic would imply that it required an increase in content and teaching time based on the extent to which it had been taught in the three-year course. It would also imply that knowledge from this topic was required to a greater extent in current practice.

A response indicating no change would imply that the topic had been sufficiently covered in the three-year course and that the knowledge imparted from it was sufficient for current practice. A majority of the topics included in this survey had also been included in the 1992 survey on perceived usefulness and allocated teaching time. A number of the remaining topics, taught in schools outside the UK, had also been ascertained for inclusion in the three-year course in the 1992 study. The remainder of the topics in this survey were included because some, but not all, schools of pharmacy had listed them in their 1996-97 syllabus. These topics were primarily within the social and behavioural element of pharmacy education, one of the areas the RPSGB had indicated as requiring greater emphasis in a four-year course. The opinions of respondents who did not study in a UK school of pharmacy have been disregarded for the whole section on undergraduate education and pre-registration training. The responses have been assessed for topics within each subject area of the course based on respondents working full or part-time in community, hospital and industrial pharmacy. The results for each area are shown in Tables 8.6 to 8.13. The combined responses of all respondents for nature of change required for topics in each subject area are shown in Figures 8.8 to 8.15.

8.3.11 (a) Pharmaceutical Chemistry

Table 8.6: Community, hospital and industry-based respondents' opinions on nature of change required for each topic in Pharmaceutical Chemistry in a four-year course.

Key:		
c = community pharmacist	h = hospital pharmacist	i = industry-based pharmacist

	% of respondents (from total in each branch)								
	Expand			Contract			No change		
Pharmaceutical Chemistry	c	h	i	c	h	i	c	h	i
Organic chemistry	0	0	0	48	52	31	52	48	69
Stereochemistry	1	1	0	60	67	31	40	33	69
Analytical chemistry	2	3	31	45	56	6	53	41	63
Biochemistry	15	16	25	25	21	25	60	63	50

The majority of respondents indicated that all the topics in this area were either to be reduced or left unchanged in a four-year course. A majority of community-based respondents supported a reduction in 'stereochemistry' in a four-year course.

In the hospital sector, a majority of respondents supported a reduction in all topics in this area except 'Biochemistry'. In the industrial sector, the majority of responses indicated that all topics be left unchanged. From Figure 8.8, the combined opinion of all respondents shows that a majority indicated no change was required in 'biochemistry', 'organic' and 'analytical' chemistry but a reduction in 'stereochemistry'.

8.3.11 (b) Pharmaceutics

Table 8.7: Community, hospital and industry-based respondents' opinions on nature of change required for each topic in Pharmaceutics in a four-year course.

Key:
c = community pharmacist h = hospital pharmacist i = industry-based pharmacist

Pharmaceutics	% of respondents (from total in each branch)								
	Expand			Contract			No change		
	c	h	i	c	h	i	c	h	i
Formulation	20	12	56	13	12	0	67	76	44
Pharmacokinetics	26	46	37	13	5	13	61	47	50
Drug delivery systems	38	29	50	5	8	6	57	63	44
Bioavailability	36	35	56	6	3	0	58	62	44

The majority of community and hospital-based respondents indicated that no change was required for all the topics in Pharmaceutics in a four-year course. The majority of the industry-based respondents, many who work in the area of formulation and drug delivery development, supported an expansion in all topics except 'pharmacokinetics'. From Figure 8.9, the combined response of all respondents shows that a majority indicated that no change was required in all the topics in this area.

8.3.11 (c) Microbiology

Table 8.8: Community, hospital and industry-based respondents' opinions on nature of change required for each topic in Microbiology in a four-year course.

Key:
c = community pharmacist h = hospital pharmacist i = industry-based pharmacist

Microbiology	% of respondents (from total in each branch)								
	Expand			Contract			No change		
	c	h	i	c	h	i	c	h	i
Aseptics	9	41	44	34	3	0	57	56	56
Immunology	35	49	13	11	3	6	54	48	81
P'ceutical microbiology	18	46	19	20	4	0	62	50	81

The results for this area are similar to Pharmaceutics in that for all topics, the majority of all respondents indicated that no change was required in a four-year course.

Figure 8.8: Respondents' opinions on nature of change required for each topic in Pharmaceutical Chemistry in a four-year course

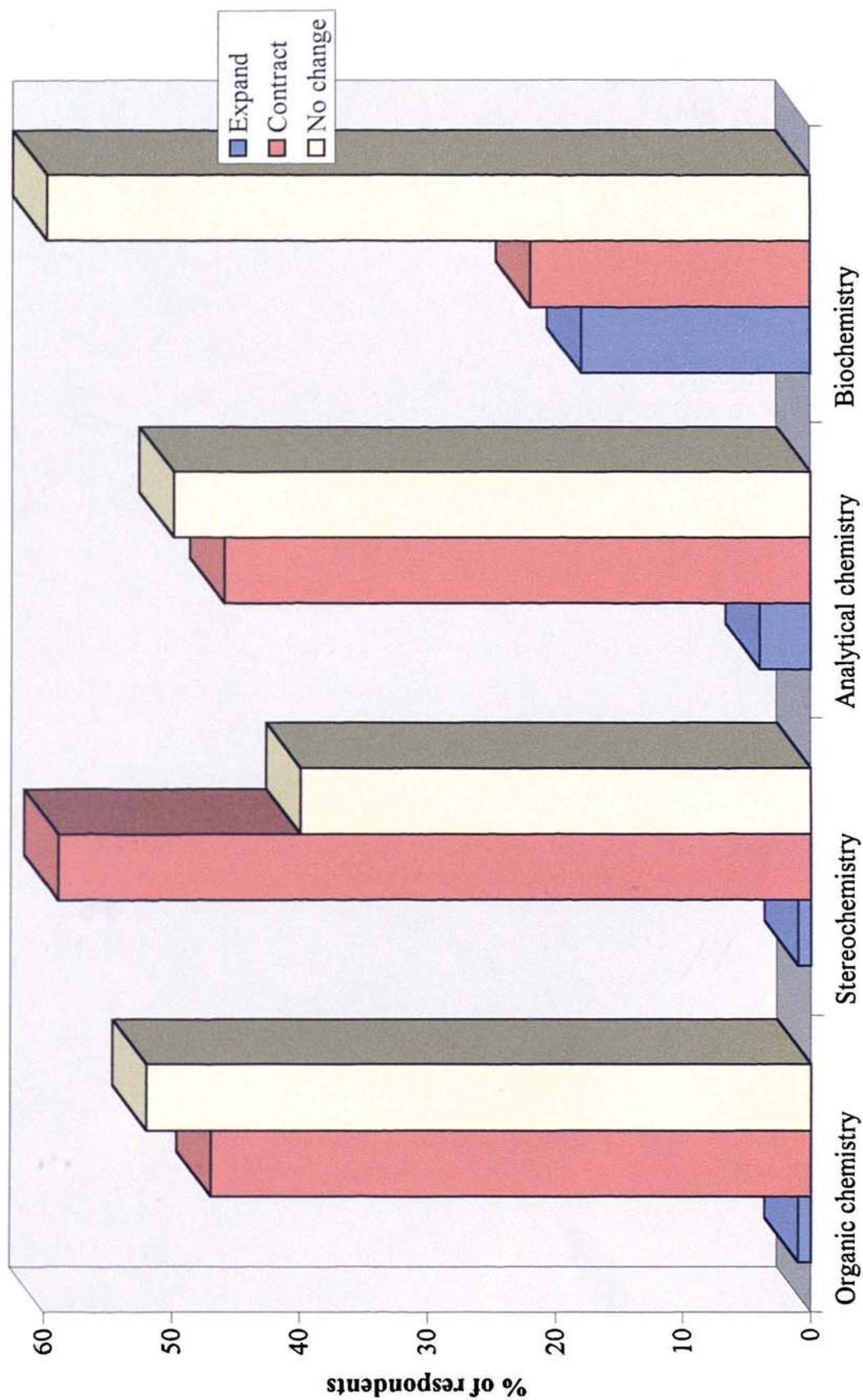


Figure 8.9: Respondents' opinions on nature of change required for each topic in Pharmaceuticals in a four-year course

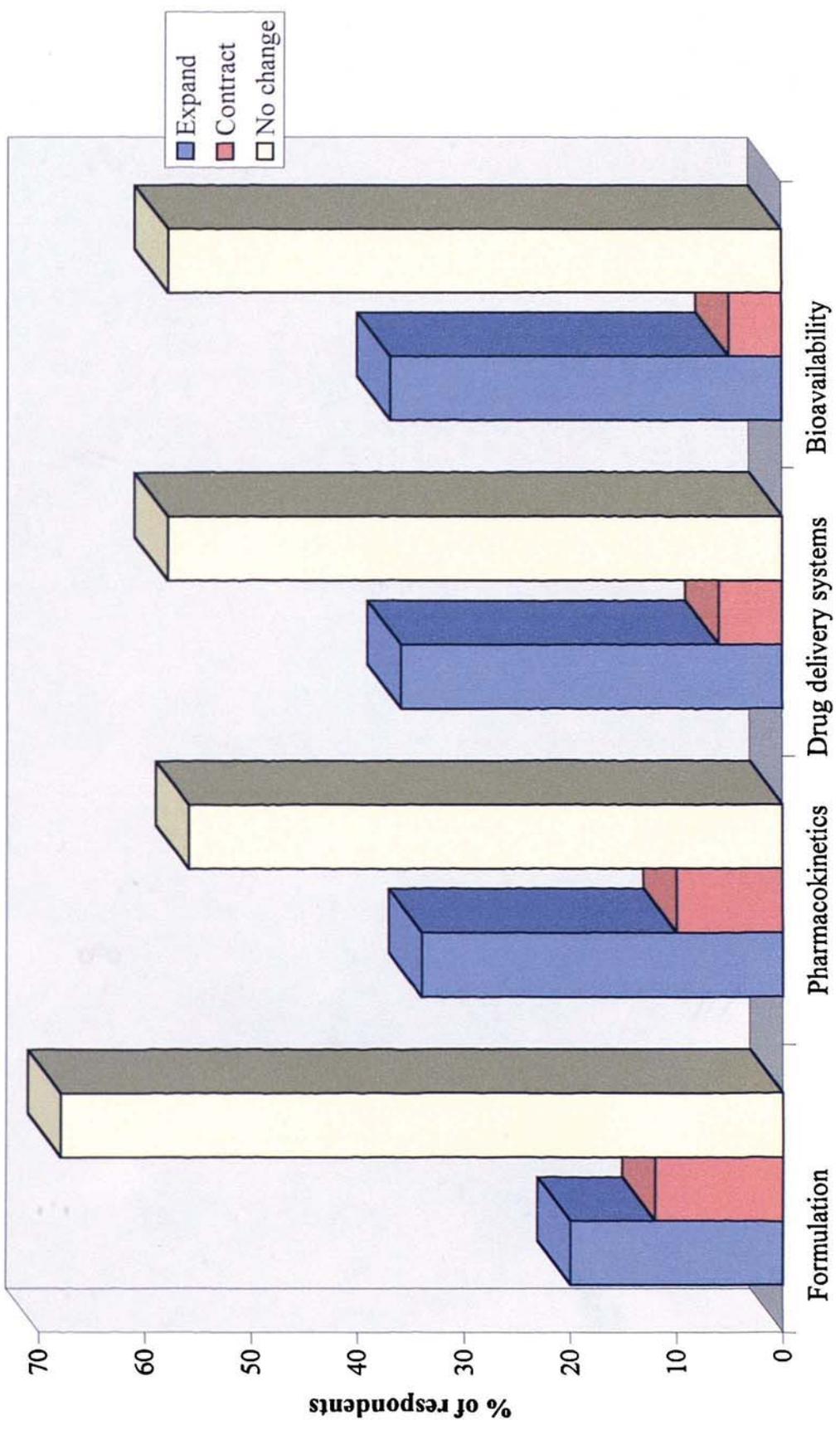
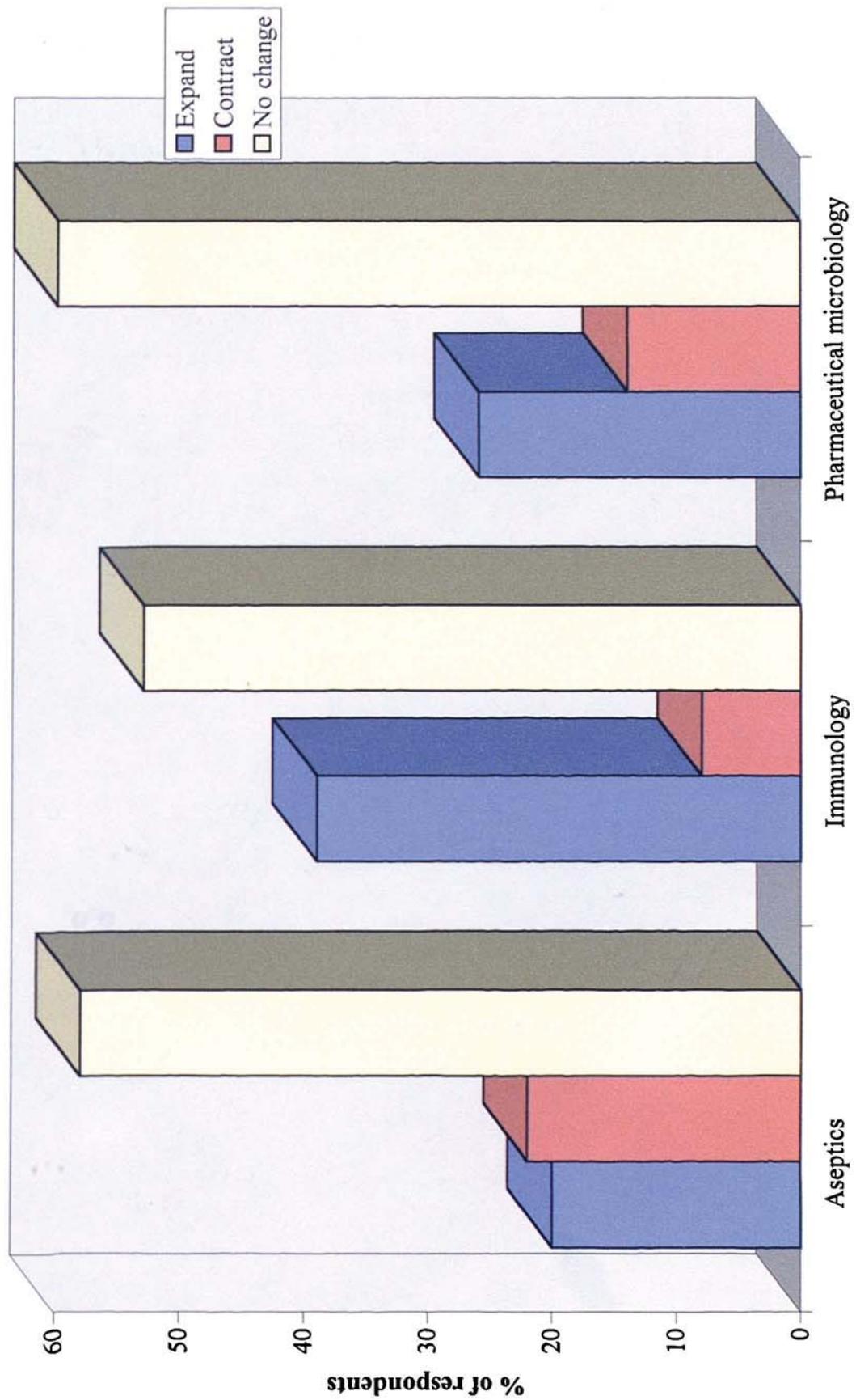


Figure 8.10: Respondents' opinions on nature of change required for each topic in Microbiology in a four-year course



8.3.11 (d) Physiology and Pharmacology

Table 8.9: Community, hospital and industry-based respondents' opinions on nature of change required for Physiology and Pharmacology in a four-year course.

Key:
c = community pharmacist h = hospital pharmacist i = industry-based pharmacist

	% of respondents (from total in each branch)								
	Expand			Contract			No change		
	c	h	i	c	h	i	c	h	i
Physiology	55	37	38	2	3	6	43	60	56
Pharmacology	64	47	31	2	1	0	34	52	69

A majority of community-based respondents supported an expansion of both 'physiology' and 'pharmacology'. In the hospital and industrial sector, the majority indicated that no change was required in these topics. From Figure 8.11, the combined opinion for all respondents shows that a small majority supported an expansion of Pharmacology, presumably because of the large numbers of community pharmacist respondents.

8.3.11 (e) Clinical Pharmacy

Table 8.10: Community, hospital and industry-based respondents' opinions on nature of change required for each Clinical Pharmacy topic in a four-year course.

Key:
c = community pharmacist h = hospital pharmacist i = industry-based pharmacist

	% of respondents (from total in each branch)								
	Expand			Contract			No change		
	C	H	i	c	h	i	c	h	i
Clinical pharmacy	85	92	75	1	0	0	14	8	25
Clinical pharmacy by internship in a hospital environment	68	93	69	7	0	0	25	7	31
Chemotherapy	39	75	31	10	1	0	51	24	69

A strong majority of hospital-based respondents supported an expansion of all these topics related to clinical pharmacy. A strong majority of community and industry-based respondents supported an expansion of the first two topics but no change was required in 'chemotherapy' in a four-year course. From Figure 8.12, the combined opinion for all respondents shows that a majority supported an expansion of all these topics in a four-year course.

Figure 8.11: Respondents' opinions on nature of change required for Physiology and Pharmacology in a four-year course

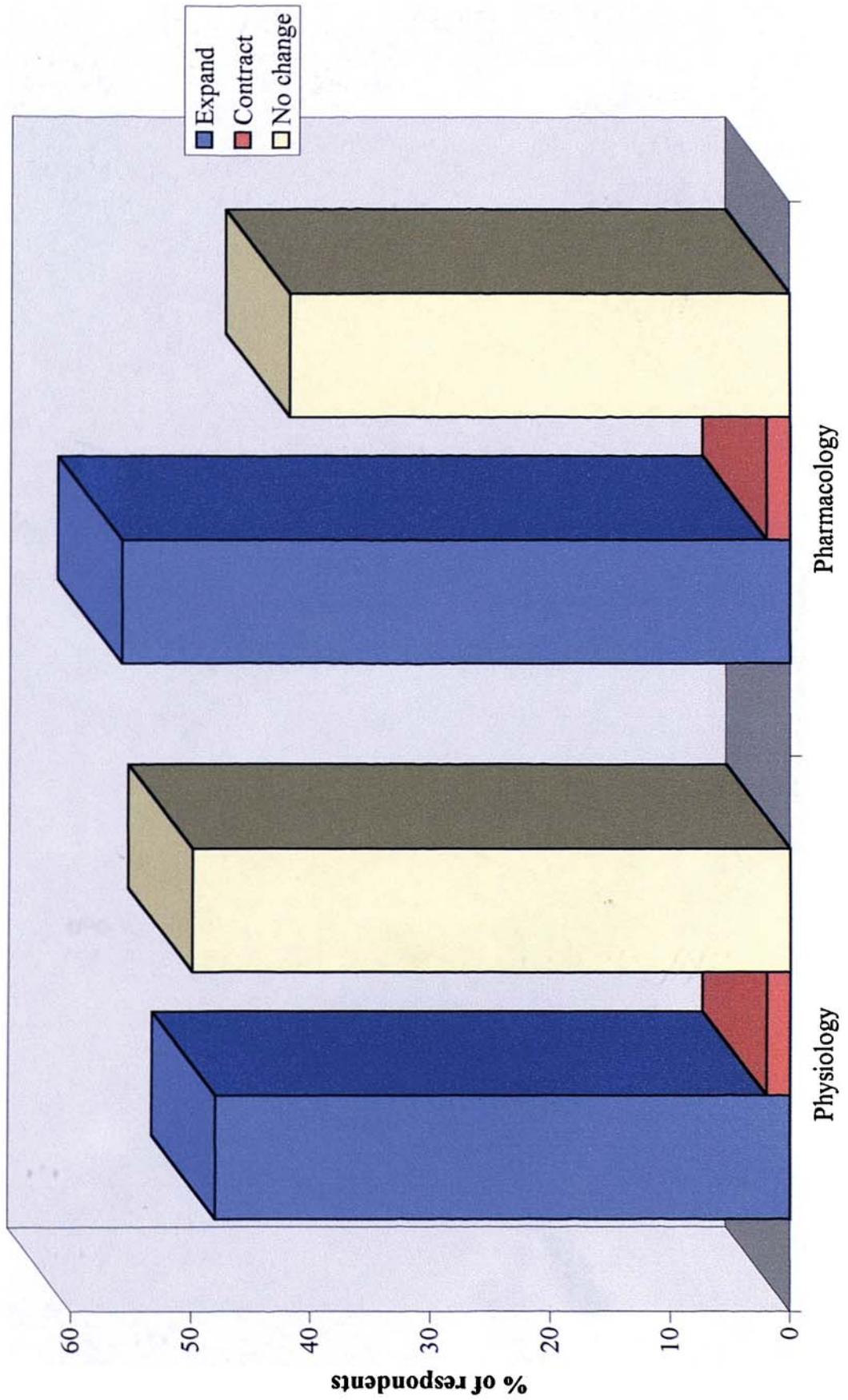
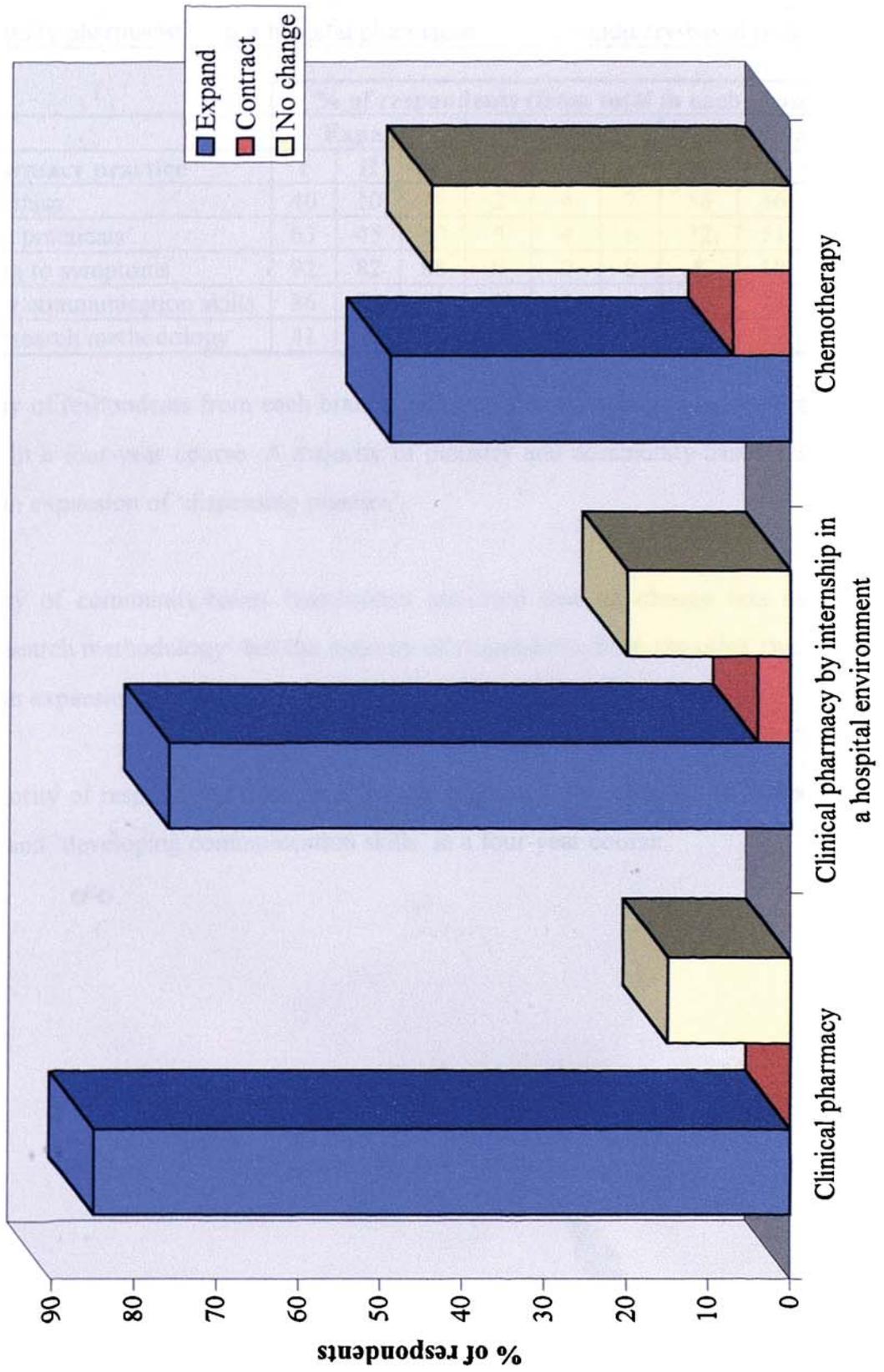


Figure 8.12: Respondents' opinions on nature of change required for each Clinical Pharmacy topic in a four-year course



8.3.11 (f) Pharmacy Practice

Table 8.11: Community, hospital and industry-based respondents' opinions on nature of change required for each topic in Pharmacy Practice in a four-year course.

Key: c = community pharmacist h = hospital pharmacist i = industry-based pharmacist
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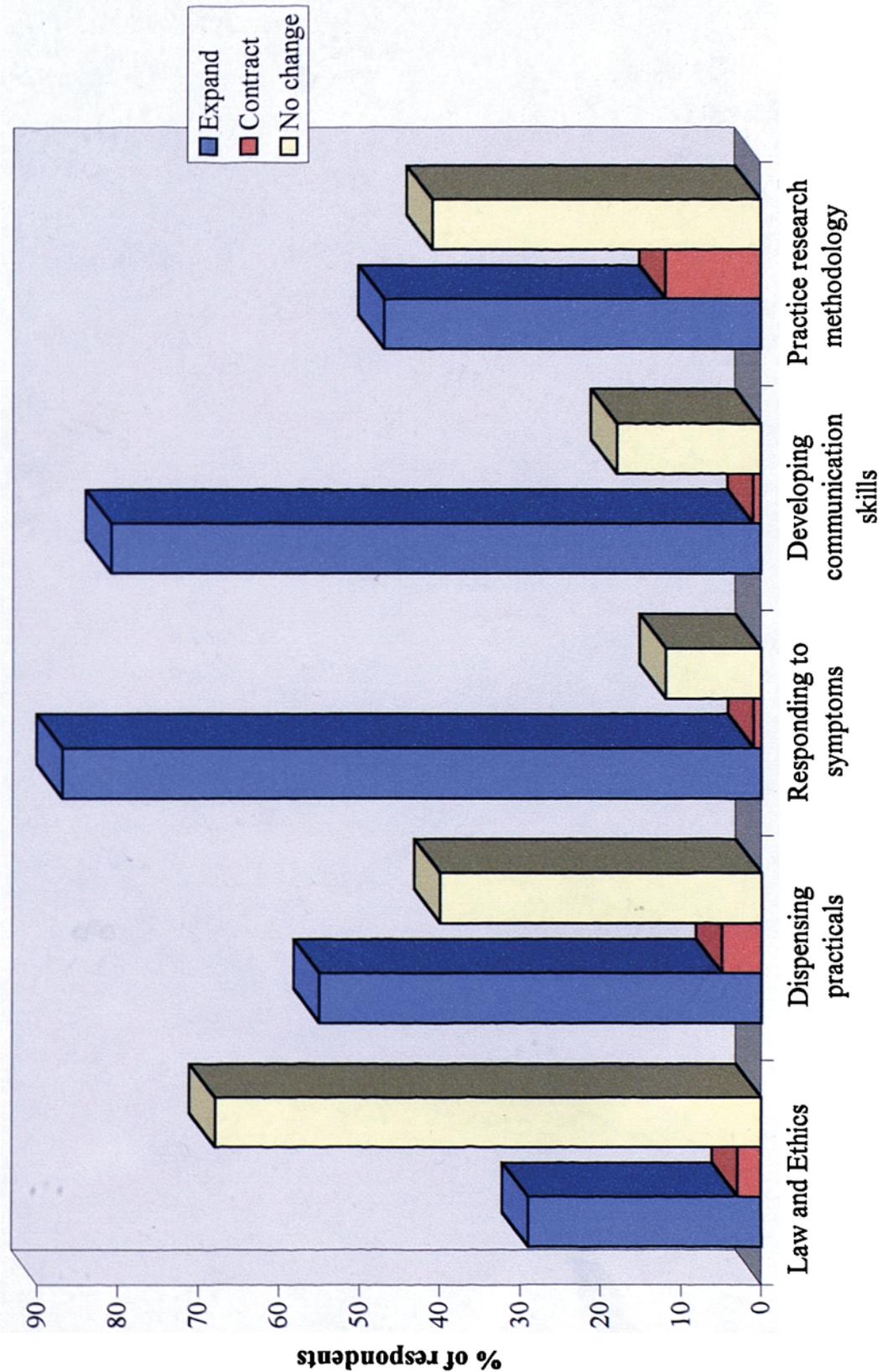
Pharmacy practice	% of respondents (from total in each branch)								
	Expand			Contract			No change		
	c	H	i	c	h	i	c	h	i
Law and Ethics	40	10	7	2	4	7	58	86	86
Dispensing practicals	63	45	50	5	4	6	32	51	44
Responding to symptoms	92	82	88	0	0	0	8	18	12
Developing communication skills	86	76	69	1	1	0	13	23	31
Practice research methodology	41	57	69	16	6	6	43	37	25

The majority of respondents from each branch indicated that no change was required in ‘law and ethics’ in a four-year course. A majority of industry and community-based respondents supported an expansion of ‘dispensing practice’.

The majority of community-based respondents indicated that no change was required in ‘practice research methodology’ but the majority of respondents from the other two branches supported an expansion of this topic.

A clear majority of respondents from each branch supported an expansion of ‘responding to symptoms’ and ‘developing communication skills’ in a four-year course.

Figure 8.13: Respondents' opinions on nature of change required for each topic in Pharmacy Practice in a four-year course



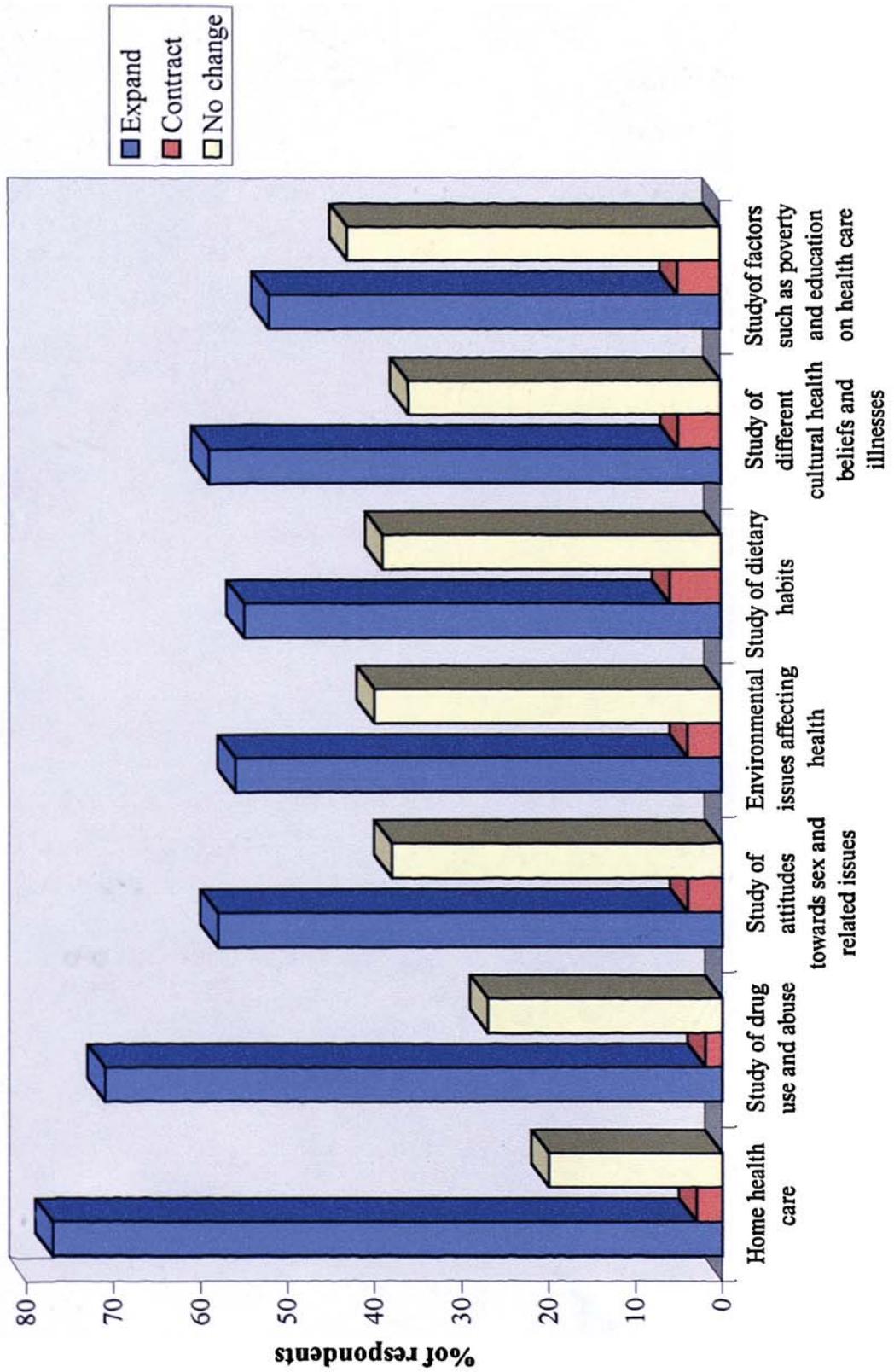
8.3.11 (g) Social and behavioural studies

Table 8.12: Community, hospital and industry-based respondents' opinions on nature of change required for each topic in Social and Behavioural studies in a four-year course.

Key:
 c = community pharmacist h = hospital pharmacist i = industry-based pharmacist

	% of respondents (from total in each branch)											
	Expand			Contract			No change					
	c	h	i	c	h	i	c	h	i			
Social and behavioural studies												
Study of the provision of home health care for homebound and elderly patients	77	79	75	5	1	6	18	20	19			
Study of drug use and abuse and its effect on health	78	59	50	1	4	6	21	37	44			
Study of attitudes towards sex and its effects on e.g. teenage pregnancy, transmission and prevalence of STD's	65	41	63	3	5	6	32	54	31			
Environmental issues affecting health	63	44	50	3	4	6	34	52	44			
Study of dietary habits of different groups of the population	65	33	56	4	9	6	31	58	38			
Study of different cultural health beliefs and illnesses affecting specific ethnic groups	64	49	63	3	6	6	33	45	31			
Study the understanding of factors such as poverty and education and their implications on health care	59	37	50	4	7	19	37	56	31			

Figure 8.14: Respondents' opinions on nature of change required for each topic in Social and behavioural studies in a four-year course



8.3.11 (g) Social and behavioural studies

From Figure 8.14, the combined response of all respondents shows that a majority supported an expansion of all the topics in this area. A majority of community and industry-based respondents supported an expansion of all the topics in this area. The topics of health care at home and drug use and abuse attracted the largest majority of community and hospital-based respondents who supported their expansion.

8.3.11 (h) Miscellaneous Topics

Table 8.13: Community, hospital and industry-based respondents' opinions on nature of change required for each Miscellaneous topic in a four-year course.

Key:
 c = community pharmacist h = hospital pharmacist i = industry-based pharmacist

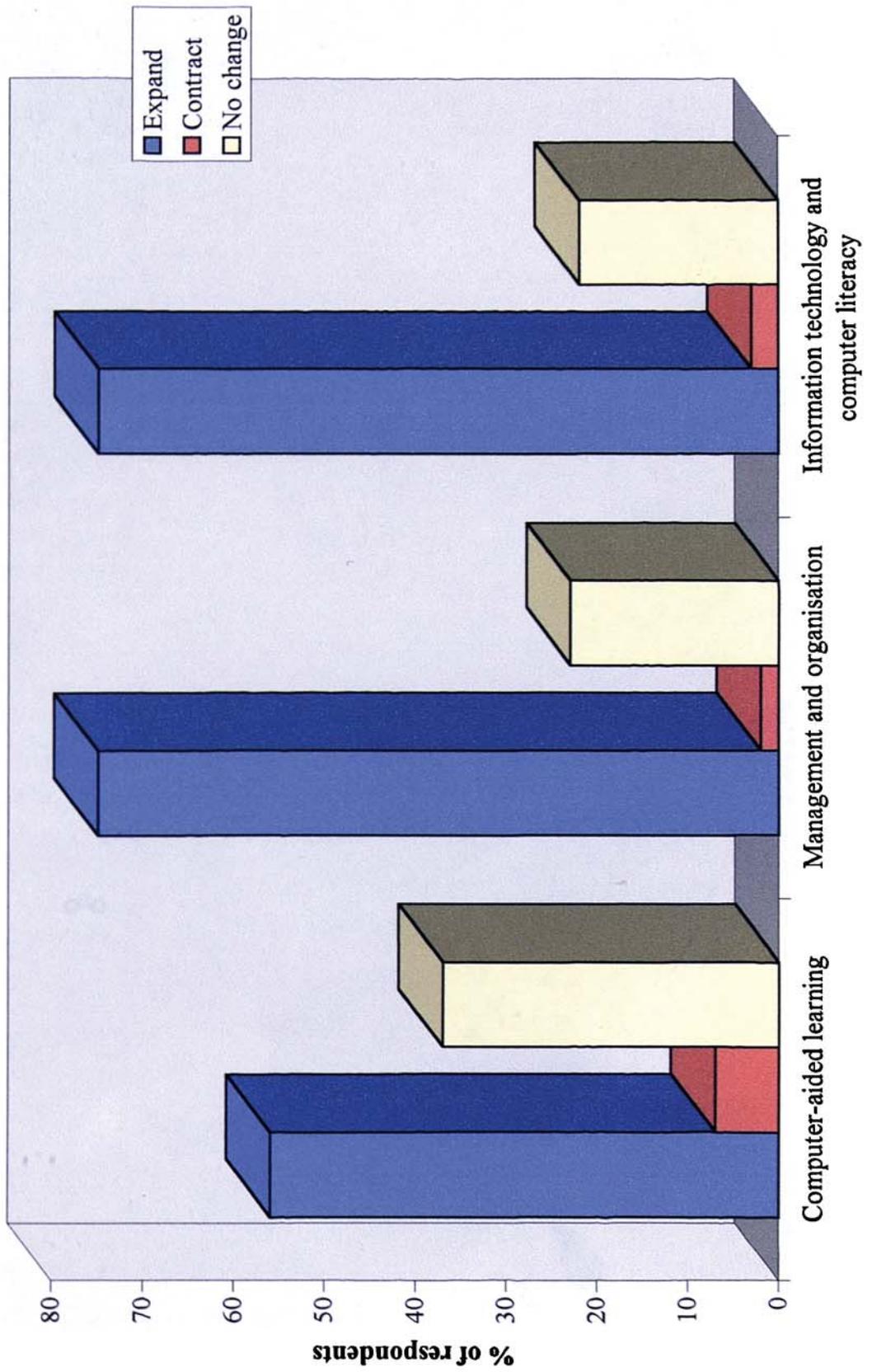
Miscellaneous topics	% of respondents (from total in each branch)								
	Expand			Contract			No change		
	C	H	i	c	h	i	c	h	i
Computer-aided learning	54	58	56	8	6	6	38	36	38
Management and organisation of business and personnel	84	58	75	1	3	0	15	39	25
Information technology and computer literacy relevant to computer use in pharmacy	74	79	75	3	3	0	23	18	25

A majority of respondents from all three branches supported an expansion of all these topics in a four-year course.

SUMMARY POINT – 19

There is strong evidence to suggest that most of the scientific topics were indicated as requiring no change in a four-year course. As in the 1992 study, the results suggest an expansion is required in some pharmacy practice topics, clinical pharmacy and all topics within Social and Behavioural studies in a four-year course. The knowledge from these topics is therefore required to a greater extent in current practice.

Figure 8.15: Respondents' opinions on nature of change required for each Miscellaneous topic in a four-year course



8.3.12 The pre-registration training year

Q14. 'Looking back to your pre-registration year, which of these changes, if included, would have improved your overall training?'

The majority of this study group completed their pre-registration training in the UK in 1993. At the time of their training, this group participated in the first ever pre-registration examination but were not involved in competence-based training which was introduced a year later (102). The respondents were offered a selection of proposed changes that may improve the quality of training if introduced to the pre-registration training year. The percentage of respondents for each response choice is shown in Table 8.14.

8.3.12.1 Split training year

A clear majority (82%) felt there would be some or great improvement in training if the structure was changed to allow a three-month period to be spent in the hospital sector for community trainees and, conversely, three months in community for hospital and industrial trainees. There was a significant difference between the number of respondents who selected 'some (35%) or significant improvement (47%) if included' and those who selected 'no improvement if included' for this change.

8.3.12.2 Mandatory education during training

A clear majority (84%) felt improvement to training could be effected by the introduction of mandatory continuing education for specific areas of training. There was a significant difference between the number of respondents who selected 'some (50%) or significant improvement (34%) if included' and those who selected 'no improvement if included' for this change.

8.3.12.3 Quality criteria

A majority (79%) felt training would be improved if there were well defined quality criteria for pharmacists wishing to act as tutors. A smaller majority (59%) felt that similarly, training would be improved if there were well defined criteria for the premises in which training took place.

8.3.12.4 The pre-registration examination

A majority (73%) felt that improvement in training could be effected by a change in the structure of the examination to include a formal observation of skills followed by an oral examination. There was a significant difference between the number of respondents who selected 'some (41%) or significant improvement (32%) if included' and those who selected 'no improvement if included' for this proposed change.

Table 8.14: Respondents' opinions on the extent to which pre-registration training would have improved if each of the following changes had been introduced to the training year.

	% of respondents		
	Significant improvement if included	Some improvement if included	No improvement if included
A three-month period in the hospital sector for community trainees and the community sector for the hospital and industrial trainees	47	35	18
Mandatory continuing education during training specifying areas requiring study	34	50	16
Clearly defined quality criteria for pharmacists wishing to act as a tutor	38	41	21
Clearly defined quality criteria for pharmacy premises to be used for training	25	34	41
An examination that includes practical observation of skills and an oral test instead of the current format	32	41	27

8.3.13 Continuing education participation

Q15a) 'Below is a list of continuing education programs and methods. Indicate which applies to you for each by placing a tick in the appropriate box.'

The present study also looked at current participation in continuing education programmes currently available. The results below are based on pharmacist respondents in community and hospital pharmacy.

(i) CPPE courses

Figure 8.16 shows the percentage of community pharmacist respondents participating in CPPE workshops and using CPPE distance learning packages. The results show that pharmacy owners and pharmacists working in single pharmacies had a higher participation in the workshops compared to multiple group pharmacists and locums. However, the uptake of CPPE distance learning packages was much higher than the workshop participation for all community-based respondents. The distance learning format was extremely popular with multiple group pharmacists as 94% had participated in this format.

(ii) Diploma in Clinical or Community Clinical Pharmacy

There was a significant difference between the number of hospital pharmacist respondents who had completed or were currently participating (88%) in an employer sponsored Diploma in Clinical Pharmacy and those who were not. However, only 12% of respondents from the multiple-group community sector had completed or were currently participating in an employer sponsored Diploma in Clinical Pharmacy or Diploma in Community Clinical Pharmacy. No pharmacists employed in single pharmacies had been sponsored by their employer to study for either of these qualifications.

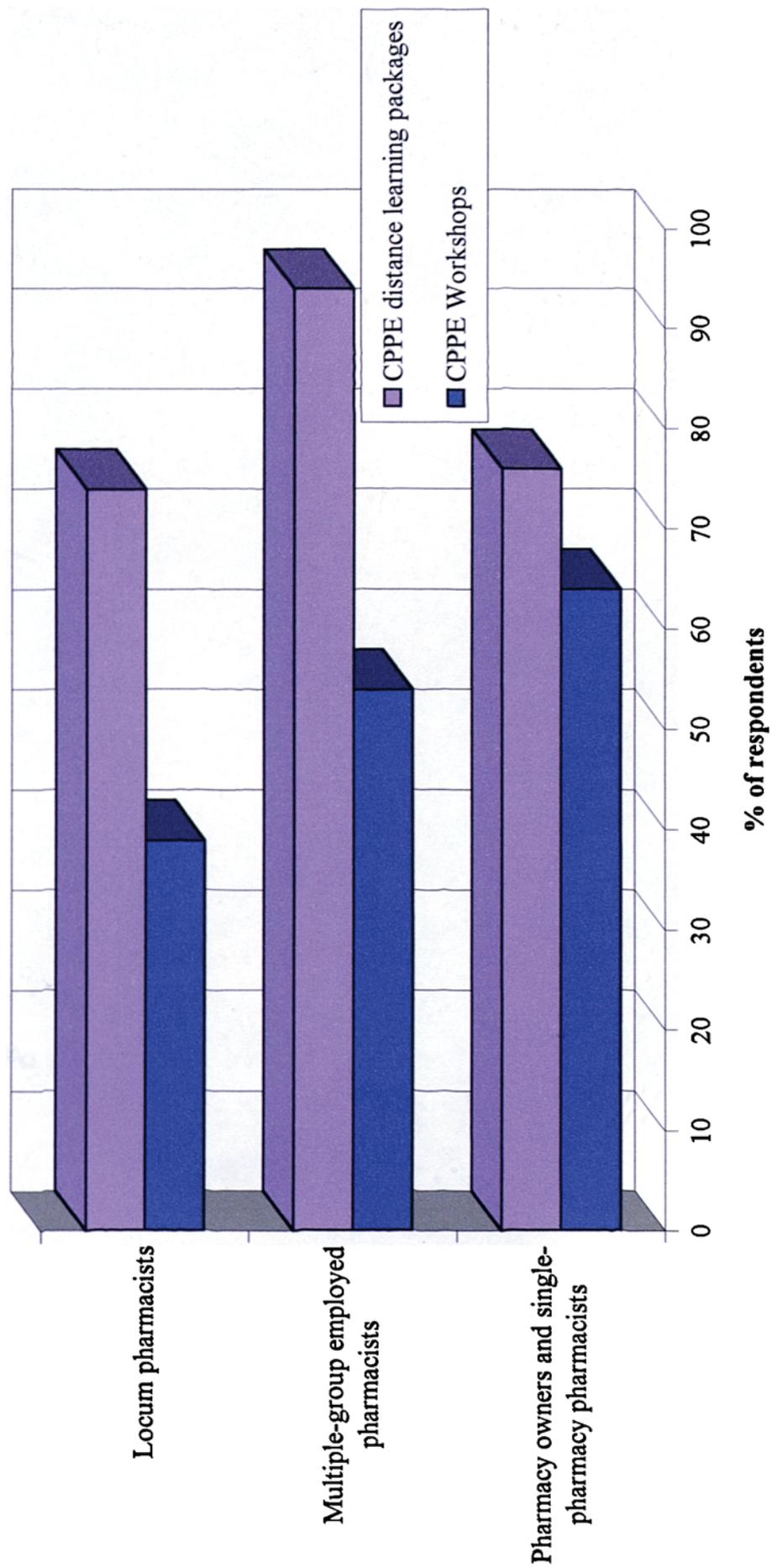
8.3.14 Reading and assimilation of literature relevant to pharmacy

Q15b) 'Below are a list of journals relevant to pharmacy. Indicate the extent to which you read them by ticking the appropriate box.'

(i) Pharmacy-related journals

Of all community-based respondents, 47% read and assimilated the clinical section of the Pharmaceutical Journal only if applicable to their needs and 45% read and assimilated this section regularly. However, 80% of hospital-based respondents read and assimilated this section regularly. A majority of the community-based respondents (80%) read and assimilated regularly either the whole or relevant sections of the Chemist and Druggist weekly journal.

Figure 8.16: Percentage of community pharmacist respondents who participate in each of the two CPPE continuing education formats



(iii) Other literature

The MEREC bulletin was read and assimilated regularly by 76% of all respondents. Medical journals like the BMJ and Lancet were read regularly by many hospital respondents but only 12 of 298 respondents in the community sector read the BMJ compared to 117 of 142 hospital respondents. Similarly, 7 of 297 community respondents read the Lancet compared to 104 of 141 hospital respondents. However, 88% of community respondents had no access to either the BMJ or the Lancet.

SUMMARY POINT - 20

The provision of continuing education by the CPPE is highly utilised by community pharmacists from this study group. The majority of hospital pharmacists from this study are however sponsored by their employers to participate in a Diploma in Clinical Pharmacy. There is however a poor level of participation of community pharmacists in this study in clinically-orientated postgraduate courses.

8.3.15 Satisfaction with pharmacy as a career

Q3. 'How satisfied are you at having chosen pharmacy as a career?'

Of the respondents, 58% were satisfied and 26% very satisfied at having chosen pharmacy as a career. The highest amount of dissatisfaction was shown by pharmacy owners (4 of 11) and community locums (45%) for having chosen pharmacy as a career.

8.4 EVALUATION AND DISCUSSION

This study achieved a response rate of 63%. The response rate for the present study is considered good in social research methodology (152). The 1992 study of pre-registration trainees, which included a majority of the present study group, had achieved a response rate of 73%. Two factors may have contributed to a smaller response rate in the present study. Firstly, the members of the present study group would have greater work responsibility as pharmacists and possibly greater commitment at home and socially. Secondly, many of the individuals had already been surveyed three times previously which could have reduced their motivation to respond to the present study.

8.4.1 Pre-registration training and current work branch of respondents

A total of 53% and 33% of respondents undertook a full-year of pre-registration training in community and hospital pharmacy respectively. A further 13% undertook training in split branch schemes. The 1992 study had shown 55% and 38% who trained a full-year in community and hospital pharmacy respectively and 7% in split branch schemes. The 1992 study did not include any Bradford graduates which may have accounted for the lower proportion of split scheme trainee respondents. In 1992, the number of graduates, excluding sandwich course students, undertaking a full year in one branch of pre-registration training was 580 in community placements and 351 in hospital (194). Of these, 297 (51%) of the community pharmacy trained and 184 (52%) of the hospital pharmacy trained pharmacists responded to the present study.

The present study showed that 61% of the respondents were working in community pharmacy, 27% in hospital pharmacy and 3% in the pharmaceutical industry either on a full or part time basis. The RPSGB survey of UK pharmacists on the 1994 register, which would include this group of respondents, shows that 61% of all pharmacists worked in the community sector, 16% in hospital pharmacy and 5% in industry. The remaining pharmacists work in diverse areas such as wholesaling, academia and non-pharmacy employment (216). Although the proportion of community pharmacists in the 1994 survey is exactly the same as the present study, there is a considerable difference in the hospital sector.

The proportion of hospital pharmacist respondents (27%) in the present study was lower than the total proportion of these respondents who had trained (33%) in this sector three years previously. However, the 27% of hospital pharmacist respondents is still considerably higher than the proportion of all UK hospital pharmacists (16%) in the 1994 RPSGB survey. This suggests that some of these hospital-trained pharmacists had moved to other sectors between 1993 and 1996 and others will continue to leave this sector later in their lives. This is further discussed in the next chapter. In addition, the proportion of hospital pharmacists had decreased from that in pre-registration training in this branch. A number of respondents from the present study were undertaking a PhD qualification and may then work in industry. This would increase the industry representation of this group to a level closer to the 1994 survey of all pharmacists on the register. A detailed comparison of respondents from the 1992 and present study with regard to branch of work, sex and ethnic origin is studied in the next chapter.

8.4.2 Multiple group community employment

The sector accounting for the largest number of pharmacists in the present study was employment within a multiple-group community pharmacy (employer owning more than one pharmacy). This sector accounted for 44% of all respondents working either full or part-time not including those locum pharmacist respondents who also worked for them. It is likely that the proportion of newly-qualified pharmacists who choose employment with the multiple community pharmacy sector may continue to increase. There are several reasons that may explain this increased likelihood and account for this sector being responsible for the largest number of pharmacists in this study.

These are;

- a) The introduction of the four-year course means that in the year 2000, there will no new pharmacists registering from UK schools. The multiple sector are counter-acting the fallow year by increasing their recruitment of pre-registration trainees and pharmacists. An IPMI survey of community pharmacy showed that four community groups accounted for approximately 700 of the 1000 pharmacists registering in 1997 (217).
- b) Increasing number of multiple-group pharmacies. The majority of the multiple community groups have increased their acquisition or openings of new pharmacies. For example, one of the newer multiples, Superdrug stores PLC opened their 100th and 101st pharmacy within their stores in 1996. The company aims to have a pharmacy in each one of its chain of 700 stores (218). Similarly in 1996, Boots the Chemists, had in a year opened eight new stores taking the total to 1,233 stores. A further thirty were planned to open during the second half of 1996 (219). In 1997, Moss chemists, part of the Unichem group, acquired its 500th pharmacy by buying an existing contract (220).
- c) The growing number of pharmacies in supermarkets. At a recent IPMI conference on pharmacy manpower, the view was expressed that the supermarket pharmacy usually has long hours and opens everyday of the week which requires the services of more pharmacists than a typical community pharmacy (221).
- d) A better remuneration package offered by the multiple sector. The basic salary is just one of a number of factors that is used for recruiting and retaining employees. Other benefits offered by the multiple sector include pension schemes, staff discounts, low interest loans, subsidised travel and health insurance (222).

- e) A different philosophy of employment offered by some multiple groups. For example, Tesco's encourage pharmacists to develop a teamwork approach with staff in the supermarket to provide a better focus on the customer (223). Similarly, BTC acknowledge that they are more successful at recruiting pharmacists because their philosophy is to give them more time to advise and counsel patients by freeing them of administrative duties (224).
- f) Less motivation to own a pharmacy. It has been reported by Professor Ian Jones (Portsmouth university) that the gross margin figure excluding professional allowance dropped to 17.8 per cent in 1993 and in January 1994 it had fallen further to 17.0 per cent (225). There will be less inclination for young pharmacists to buy pharmacies if profit margins continue to decrease.

8.4.3 Hours of work

The results show that pharmacy owners and community locum pharmacists worked the longest hours. For the locum pharmacist, the hours of work should be a voluntary choice due to a self-employed status. However, locums may not be able to dictate the number of hours they wish to work in a day in a pharmacy. It has been suggested that the traditional 44-hour week has now been replaced by a 60-hour week for a pharmacy. This is because many pharmacies remain open during the lunch hour and close later in the evening (226). It is usually easier for an employer to appoint just one locum to work the full opening hours of their pharmacy each day. In 1993, there had been an adequate supply of locum pharmacists and both employers and locums could be selective in their choice of a locum (227). However, since then, the shortage of pharmacists has increased the demand on existing locums. It may therefore be difficult for locums to refuse work created by the increased demand for it ensures a high level of income.

8.4.4 Attitudes to status and future development of current career

A majority of respondents were unhappy with the public perception of their professional status as a pharmacist and dissatisfied with public awareness of their role as a pharmacist. Over the past few years, there have been several campaigns run by the NPA to increase public awareness of the role of a pharmacist. This commenced in 1983 with the 'Ask your pharmacist' advertisements which have been followed by numerous similar campaigns (228).

In his topical reflections in the *Chemist and Druggist* on the profession of pharmacy, Xrayser who is a community pharmacist, suggests that the misconceptions the public have of the pharmacist's professional status is because they are unaware of the educational background of a pharmacist (229).

Two reasons that may contribute towards these respondents feeling dissatisfied with public awareness of their role are;

- a) That the years of positive propaganda the respondents receive in their school of pharmacy before commencing practice creates too great an expectation of the importance of their role as a pharmacist. This does not then relate to the satisfaction shown by the public for the duties performed by these respondents in practice.
- b) The nature of work of some of these respondents does not allow them to create a greater awareness among the public. For example, if their work restricts them to dispensing, there may be little opportunity to counsel patients or participate in extended roles.

The lowest satisfaction with salary was shown by community locums. A survey of salary increases of community pharmacy staff in 1994 showed that locum rates had only increased by 1.75% in 1994 compared to 2.8% in 1993 and 4.55% in 1992. In addition, several companies had reduced travel allowances, so leaving locums with an actual reduction in income (230). However, at the time of the study the increasing demand caused by shortage of locum pharmacists should have forced an increase in locum rates. A cursory glance of advertisements for locum pharmacists in the *Pharmaceutical Journal* shows that a rate of £11.50 to £12.50 per hour was the 'going' rate in 1994. A similar observation of advertisements in 1996 shows the rate to be about £13.50 to £14.50 per hour. This represents an increase of more than ten per cent which makes it difficult to understand why they are dissatisfied.

A clear majority of the community pharmacists agreed that their work did not fully utilise their professional knowledge. This was in strong contrast to the response of hospital pharmacists. This has a direct connection with the perceived dissatisfaction of these respondents with public awareness of their professional role. Public awareness will improve if the community pharmacist can fully utilise his or her professional knowledge. At the 1993 YPG conference, Jon Merrills, then deputy chief pharmacist in the DOH stated that pharmacists had to clarify their link to health, tell the public of the complexity of the knowledge base they used and needed to provide individualised services to the public (231).

Simply, these young community pharmacists in this study have to promote themselves and create opportunities to utilise their knowledge. Their youth puts them in a unique position of being able to make positive changes to their role in the work environment which both utilises knowledge to a greater extent and increases public awareness.

8.4.5 Organisational changes with most potential of improving work environment

It was considered important to ascertain those factors which could most improve the working environment of this study group of pharmacists, particularly at this early stage of their career.

(i) Employment of another pharmacist

The employment of another full-time pharmacist was the change with the highest potential of improving the work environment for both community and hospital-based respondents. The appointment of a part-time pharmacist was the change with second highest potential by the community-based respondents. A second pharmacist would reduce the current workload of respondents and allow them to pursue further roles. For example, it would allow them to have greater contact with patients in an advisory capacity and participate in extended professional roles thereby also increasing public awareness of their role. In the hospital environment, a second pharmacist would allow respondents to develop their clinical role and interaction with other health professionals. However, the current manpower problems and financial implications will make universal appointment of second pharmacists in both these sectors very difficult.

(ii) Liaison with local medical professionals

This was the change with the fourth highest potential of improving the work environment of both community and hospital-based pharmacists. However, it is difficult to create a system to facilitate closer liaison with local medical practitioners. The development of this relationship requires initiative from these pharmacists. The community pharmacy employer can encourage the liaison by freeing up these pharmacists to visit local surgeries regularly to instigate and develop the relationship. In the hospital environment, the relationship is easier to develop if the pharmacist is involved in ward rounds and meetings with practitioners.

(iii) Support from superiors

This was the change with the second highest potential of improving the work environment of hospital-based respondents. In this sector, there is a hierarchical system, which normally implies that pharmacists of a senior grade have greater responsibility and may be in charge of a pharmacy speciality.

This inevitably means that the hospital pharmacists in this study, most of whom were C-grades, were working under the supervision of a senior pharmacist.

Some of the reasons that may account for poor support by superiors in hospital pharmacy are;

- a) the senior pharmacist may have themselves have great work, staff and administrative responsibilities. Therefore, they are too busy to support these respondents.
- b) the senior staff are only interested in their own welfare and progression.
- c) the senior staff have not been trained to provide support to junior grade pharmacists.

8.4.6 Opinions on the future of pharmacy in the UK

The individuals in this study represent young pharmacists who are serving the profession at a time where it is facing great challenges. They will be expected to have a crucial role in the implementation of recommendations from the RPSGB's New Age campaign and the 'Building the future' strategy report. In addition, their youth puts them in a position to develop recently introduced and future extended roles. However, the nature and extent of participation in these roles may be governed by the changing pharmacy environment in which they work. These pharmacists strongly indicated that it would become increasingly difficult to own an independent community pharmacy in the future. This sentiment is expressed quite possibly because of the continuing expansion of the multiple community pharmacy group. In 1994, 32 per cent of all pharmacies in the UK belonged to multiples ranging from small chains of five or six pharmacies to the very largest. This proportion had been steadily increasing from preceding years (232). As discussed previously, the expansion of multiple-group pharmacies is continuing, mainly, through buying existing contracts. These pharmacists may feel that they will never be able to compete with the multiples for viable pharmacies. It is therefore possible that in the future, a small number of large-chain multiple employers will dictate the nature and extent of participation in extended professional roles for most community pharmacists.

Almost all the respondents agreed that mandatory continuing education would have to be introduced if the widening of the role of the pharmacist is to continue. It was recently announced by the President of the RPSGB, Mr. Peter Curphey, that the bones of a system of continuing professional development were already in place, and subject to RPSGB Council agreement, the system would almost certainly become mandatory (233).

There is a strong feeling among the hospital-based respondents that their own prospects of progression in this environment are hindered due to stagnation of pharmacists in senior positions. In other words, progression of pharmacists becomes more difficult as senior positions are occupied by staff who are either content with that position or are limited in their own progression. This could make young hospital pharmacists increasingly disillusioned if they feel there is little potential for progression. It is possible that they may even consider leaving this sector if the prospects are poor, because from earlier results, a majority agreed that they were keen to be promoted every few years. This is a cause for concern as highlighted in a recent NHS Executive Pharmacy Workforce and Training Executive Summary Report which has indicated that more needs to be done to retain younger pharmacists. Although the perception of poor progression is not addressed in the report, it acknowledges that research needs to be done to understand the changing nature of the hospital pharmacy workforce for the development of effective recruitment and retention of pharmacy staff (234,235).

8.4.9 Content of topics for a four-year course

In April 1995, the Council of the RPSGB formally announced that the pharmacy degree course would be of a four-year duration from 1997. The Council approved the view of the Heads of Schools that new or enhanced content would be added throughout existing programmes and that most of the new material would be scientific subject matter (58). However, as discussed in Chapter One, the decision to approve an even greater content of scientific subject matter immediately raised some concerns. The primary concerns expressed by many authors have two main themes. Firstly, that the four-year course should re-address the balance between the traditional scientific and practice-orientated content of the course (62,236,237,238,239). Secondly, that opinions of pre-registration trainees, recent graduates, pre-registration tutors and 'grass root' academics had not been sought on course content in a four-year course (53, 61, 62). These issues have been further discussed in Chapter One. Extensive literature searches show that much of the debate and discussion about the four-year course is based on anecdotal comments made by a few interested members of the profession, in response to a suggestion or policy implementation by the Council of the RPSGB or by academics based on their experiences of pharmacy education.

The literature has shown that in the UK, any research into pharmacy education has usually encompassed one school or one area of the country, and previous to the surveys in this thesis, opinions of graduates and pharmacists on a nation-wide scale in the UK had never been sought either on the three or four-year pharmacy course. The 1992 study, described in Chapter Four, obtained opinions of a group of newly-graduated pre-registration trainees on allocation of teaching time of topics in the three-year course based on perceptions of knowledge requirement for future practice. The present study was designed to ascertain opinion on change in content of syllabus topics for a four-year course based on the knowledge currently required as a pharmacist. The results from the 1992 study had supported a decrease in allocation of teaching time for some of the traditional chemistry-based topics, no change in the other scientific topics and an increased allocation of clinical pharmacy and some topics within pharmacy practice. The results from the present study are very similar to those in 1992. A comparison of the results on content of course topics between these two studies is studied in more detail in the next chapter.

(a) Scientific topics

The results show that the majority of respondents felt there was no need to change the content of any of the topics within the area of Pharmaceutics and Microbiology and the topic 'physiology'. However, there were a few differences in opinion based on respondents in a specific branch of pharmacy. Within Pharmaceutics, formulation and drug delivery development were supported for an expansion by a majority of respondents working in the pharmaceutical industry and immunology by a majority working in hospital pharmacy. This implies that any increase in these three topics should be incorporated as specialisation options for students wishing to work in industry or hospital pharmacy. For example, in France, several schools offer specialisation options in Pharmaceutics in the final year for students wishing to pursue a career in the pharmaceutical industry (240). Within Pharmaceutical Chemistry, the majority of respondents supported a reduction in 'stereochemistry' and no change for the other topics. The results showed a small majority who supported an expansion of Pharmacology.

Based on these findings, the overall recommendation would therefore appear to be, that the core content of scientific topics should be left relatively unchanged in the four-year course, other than an expansion in the areas of pharmacology and reduction in that of stereochemistry.

(b) Clinical pharmacy

There was strong support for expansion of clinical pharmacy by all respondents irrespective of branch of work. Similarly, there was strong support for an expansion of clinical pharmacy by integration of students in a hospital environment. This method of teaching is endorsed by some hospital pharmacists and academics. In a report by a senior hospital pharmacist, it is suggested that it would be possible to accommodate students in a training base in a hospital within travelling distance of a school of pharmacy. The report states that students could assist with real tasks associated with the provision of pharmaceutical care in the same way that medical students contribute to the medical management of hospital patients (241). It has also been suggested by some hospital pharmacists that the final year of the four-year should include a hospital clinical secondment and community secondment to better integrate knowledge and practice (242). Some pharmacy courses currently provide hospital visits for their students, but the quality and quantity varies between schools. The school of pharmacy at Bath for example, ensures that students receive 36 hours of didactic lectures at the university from expert clinicians covering various disease states, and five three-hour hospital visits run by clinical pharmacists. The staff who organise the Bath programme suggest that experiential programs provide students a structured learning opportunity to provide pharmaceutical care in the clinical setting and that by learning to apply their knowledge in the practice setting, students can begin to understand how this knowledge will contribute to their professional life (243). An integrated format of teaching has been adopted at the school of pharmacy at King's college London. At this school, joint therapeutics teaching sessions with final year pharmacy and medical students who have completed their second MB have been designed. Interdisciplinary pairs are assigned a patient with common medical and therapeutic problems. The pharmacy student has to obtain the patient medication history. Subsequently, the medical student presents a brief medical history of the patient's current medical problems and the pharmacy student presents the current therapy, its rationale and how it is to be monitored (244). However, unlike medical education, there is no additional funding for clinical or integrated teaching. It usually relies on the initiatives shown by individual schools. One of the problems is that most schools of pharmacy are not in the same institution as medical schools. If they were, it would be easier to provide integrated learning. As early as 1986, the Nuffield Committee recommended for schools to develop closer links with medical schools. In this way, the provision of clinical and integrated teaching could be enhanced.

These formats of learning adopt problem-based learning (PBL) methods, which are ideal method for teaching both university-based and integrated clinical pharmacy. There are numerous reports documenting the benefits of teaching medicine or clinical pharmacy using PBL methods (84, 85, 87, 88, 89, 90, 91, 92, 94, 95) and these are discussed in Chapter One. In fact, in medical education, PBL is now used to teach large areas of the course. As early as 1992, the General Medical Council had made a recommendation for degree courses in medicine to introduce a substantial component of problem-based learning (51).

There are several issues of consideration if schools are to increase PBL and integrated clinical pharmacy teaching including hospital visits. These are;

- a) The financial implications. There is no additional funding for schools to arrange teaching sessions with local medical schools or hospitals. It is unlikely that funding can be made available by the DOH because pharmacy is funded as a science subject and not one allied to medicine, which attracts additional clinical funding.
- b) The internal staffing resources. PBL ideally requires small group teaching which demands greater numbers of trained staff. This again has financial implications for schools, and it is difficult to envisage PBL as a major learning method particularly as student numbers increase.

Despite this constraints, the four-year course syllabus includes fixed proportion of directed study periods. This study encourages students to work on their own either in preparation for a course item or to enhance understanding of taught material. It is possible to incorporate PBL in the directed study, which can enhance the understanding of taught clinical material. For example, for every major therapeutic area taught, students can be given problem-based case studies to work through in the directed study.

(c) Pharmacy practice

There was a strong support for expansion of 'communication skills' and 'responding to symptoms' in a four-year course. Irrespective of branch of work, knowledge from these two topics is clearly used in practice regularly. These areas were also shown to require an increased allocation of teaching time in the 1992 study. The teaching and awareness of required communication skills can be fully achieved in a four-year course by introducing a greater element of 'realism'. For example, in the USA, standardised patients (SPs) have been used to successfully enhance the teaching of 'real' communication skills. By definition, SPs are patients uniquely qualified to teach and assess interpersonal skills.

In pharmacy, SPs can be a patient, nurse or physician with whom pharmacists usually interact. They are used in laboratory classes and provide students the opportunity to learn how to deal with difficult situations in a controlled environment and provide necessary practice required for competent patient counselling (245).

(d) Social and behavioural studies

The area of Social and Behavioural studies has been continually promoted by the RPSGB for greater inclusion in a four year course. One of the four reasons the RPSGB presented to the HEFCE for extension to the course in 1992 was, that the course needed to incorporate a useful grounding in social and behavioural sciences relevant to practice and meeting the needs of patients and other health care professionals. The importance of this area was re-emphasised at the AGM of the RPSGB in 1997. At the AGM, Mr. Ian Caldwell (1996-97 President, RPSGB), stated that Council had encouraged and required schools of pharmacy to introduce elements of the social and behavioural sciences to their courses in order to ensure that graduates had excellent communication skills and that knowledge about people and patients was as important as knowledge about medicinal products (238). In the 1992 study, a small majority of respondents had supported an increased allocation of teaching time of this subject. Because of the diversity of this subject, a wide range of individual topics encompassing this area were selected for respondents to consider.

The results showed that a majority of community and industry-based respondents supported an expansion of all the topics. The hospital-based respondents were more discerning as only three topics were supported by a majority for expansion. A majority of respondents from each branch supported an expansion of the study of drug use and abuse. This can include the nature of various drugs of abuse, understanding dependence and addictive personality disorders, role of the pharmacist in advice and supply of prescription drugs used for treating dependence. This area has been successfully introduced in the curriculum in a pharmacy program at the University of Toronto, Canada. The objectives of the course were to teach the students of their role in the detection and prevention of alcohol and substance abuse and increase their knowledge with respect to the assessment and treatment of patients with alcohol and drug abuse problems (246). In the UK, an observation of school syllabi shows that this area is usually incorporated within pharmacology and clinical pharmacy.

A study of third year pharmacy undergraduates at the School of Pharmacy, London and all pre-registration trainees who had graduated from the school the preceding year found that a majority of respondents expressed the view that there should be an increase in time spent on teaching about drug misuse and about HIV/AIDS in the course. Although a majority in both groups felt the teaching of pharmacology of drugs liable to misuse was good, teaching concerning rehabilitation and treatment for drug misusers, drug treatment for HIV/AIDS and health advice on HIV/AIDS was poor (82).

A majority of community and industry-based respondents supported an expansion of the study of attitudes to safe sex and related factors e.g. transmission of STD's. This area could be taught as a specialisation option in the final year. A survey of three USA colleges of pharmacy had also found that students were willing to learn about safe sex and AIDS. The students recognised the important role a pharmacist had in advice on AIDS prevention and felt the course should increase their knowledge on AIDS transmission and prevention (247).

The study of dietary habits of different groups of the population were also supported for an expansion by community and industry-based respondents. The community pharmacist has an important role in advice on good dietary habits, foods of nutritional value and nutritional supplements particularly for the elderly or frail. In addition, the pharmacist dispenses a wide range of food supplements for nutritional disorders. Many USA schools of pharmacy utilise nutritional experts to teach nutrition and dietary education. Some of the basic entry-level programmes (equivalent to a degree course) provide between 12 to 15 contact hours of nutritional education, with many providing experiential training as well. This is normally in the form of clerkships focused around nutrition (248).

8.4.9.1 Critical evaluation of results on course content

One of the observations made from these results was that although several areas were supported for expansion, only one topic was supported by a majority of all respondents for a reduction. It is the old adage that 'it is easier to increase rather than decrease knowledge'. Secondly, because respondents were asked to consider the required content of topics based on current knowledge requirements, it would be inevitable that those areas directly applied in practice appear to show the strongest perception of deficiency in a course.

However, there is no question that these areas require much greater consideration in the design of a four-year syllabus. The overall impression from the results is that a four-year course should retain the scientific component to the same extent as it was in the three-year course, but, increase the clinical, practice and social component. As discussed in Chapter One, pharmacy is funded as a science-based course which means that the scientific content will have to be maintained as a significant component of the course. However, this component can also utilise problem-based learning methods similar to those recommended for the clinical component. Furthermore, many important generic skills can be and are taught in the scientific component. These include decision making, analytical and communication skills. The importance of maintaining an adequate science-based was also recognised by the 1986 Nuffield Committee of Inquiry. However, the Committee felt that attention should be focused on ensuring that the science taught was the appropriate science and taught in the most effective way. The report indicated that teaching of science in the course must be applied in that it would be relevant to pharmacy and must relate to all aspects of the work, behavioural and pharmaceutical (16).

In light of current policies there are some constraints preventing a radical increase of the clinical, practice and social component of the course. Some of these are;

- a) Whilst pharmacy is funded as a science subject, there will be no additional funding by the DOH to broaden or strengthen clinical aspects of the course, particularly those which require hospital-based teaching by clinical practitioners. The RPSGB should consider discussion with the DOH for additional funding. In addition, individual schools have to continue fostering relationships with local hospitals to utilise their facilities and pharmacist staff to facilitate the teaching of this component of the course.
- b) Universities will continue to recruit staff who have proven research ability and who can enhance the next research rating in 2000. However, it is difficult to recruit pharmacy practice staff who have well established research profiles. This area of research is relatively young in comparison to the scientific areas. The universities should adopt a different attitude towards recruitment of expertise staff in this area. In addition, the RPSGB should adopt a firmer stance on this issue during the accreditation process.

- c) The current salary structure offered by many universities is unlikely to attract pharmacists with proven track records in these teaching fields. The salaries offered are far lower than those offered by 'more' glamorous position in health authorities, industry and community practice. This issue has to be recognised by academic institutions, if they are to attract more pharmacists to teach the vocational elements.

Despite these constraints, the strength of the results supporting expansion of many of the topics within the clinical, practice and social component of the course, means that they should be taught to a much greater extent in a four-year course. In Chapter 10, there is further discussion on why this is necessary, particularly in light of recent governmental and professional policies towards the broadening of the pharmacist's role. Other than the basis that pharmacy is funded as a science-based course, it is difficult to understand how the Council of the RPSGB approved the view of the Heads of Schools that for the four-year course, new or enhanced content would be added throughout existing programmes and that most of the new material would be scientific subject matter (58). As this was the first nation-wide study of pharmacists opinions on a four-year course, a further recommendation would be to evaluate the new-four year course in all schools of pharmacy. This evaluation should assess the actual changes made to the nature and extent of the scientific and practice-orientated component. The evaluation should also consider how individual science-based topics are made relevant to practice. In addition, the extent of using novel methods of learning in all areas such as PBL should be studied.

8.4.10 The pre-registration training year

Although it was not possible to assess the opinions of this group on the structure of the training year with regard to competence-based assessment, opinions could be sought on general methods of improving the training year. Some of the issues considered in the study were based on results collated from the study of pre-registration tutors (Chapter Seven) and some on recent debate of the role of training. In the 1992 study, respondents had offered opinion on training based on perception of the skills they would require in practice as pharmacists. The present study was designed to assess whether some of those opinions were still held after the respondents had been practising for three years. The 1992 Study had shown strong support from respondents for a 6-month split training year.

A motion for a compulsory split training year was proposed by the BPSA as early as 1984 which was then recommended in 1987 by a RPSGB Council working party, with the objective of producing pharmacists with broad knowledge and skills. In 1994, the Council indicated that they would be considering a proposal for the long term objective of a community-hospital joint pre-registration year (138). This was further supported in 1995 by the acceptance by the Council of the RPSGB to acknowledge it as a policy for review after consulting interested employers and students (139). The BPSA again underlined in 1995 its support for a split pre-registration year accompanying the new extended four-year course (140).

After consultation with tutors, employers and other interested parties, the Council decided in April 1996, that it no longer intended developing a mandatory joint pre-registration year involving six-month periods in both community and hospital pharmacy (141,142). However, there may still be a possibility of a structured and compulsory smaller period of time spent in another branch of training. The minutes of the June 1996 RPSGB Council meeting state that as result of moving to a set of enhanced competences to be expected of all new registrants, the main consequence is that some split of the total period between hospital and community practice may be essential since a broader range of competences may not be easily obtained in one sector alone (17). The present study therefore asked respondents to consider the value of a split scheme involving a three-month period in another branch. A clear majority of respondents felt there would be either some or significant improvement to the training year if this split scheme was introduced. A three-month period of training in a second branch would give a trainee at least some exposure to the skills required in this branch, and yet, allow sufficient time for training in the main branch.

The results showed that respondents felt training would be improved if there were clearly defined criteria for pharmacists wishing to act as tutors. At present, the minimum criteria for becoming a tutor is three years of qualification as a pharmacist and attendance of a one-day course organised by the RPSGB for first-time tutors. There have been arguments for a more detailed criteria for the selection of tutors. As early as 1993, the BPSA called for training of pre-registration tutors. At the 1993 BPSA conference, members called for a selection procedure and monitoring of tutors. The members felt that with the introduction of competency testing and examination, there was a greater emphasis on the role of the tutor who would require better training to ensure a trainee was successful (136). Following this, at the AGM of the RPSGB in 1993, the BPSA proposed this motion which had been passed at their conference.

An amendment to the motion was put forward by a practising pharmacist indicating that the Society should improve training and monitoring procedures for tutors but ensuring the right balance was struck between making this and placing too onerous a burden on tutors. This motion was carried at the AGM (137). However, there have been no documented developments on this area since then. This relates to the discussion in the previous chapter underlining the need for standardised training of assistant and main tutors before they can take on this role. The effectiveness of the pre-registration training scheme depends on the quality of these tutors and this issue requires immediate consideration.

At present, the pre-registration examination is structured as a two-paper open and closed book examination comprising solely of multiple choice questions. A majority of respondents felt there would be some or significant improvement in training if the examination included a practical observation of skills and an oral test instead of the current format. There has been, perhaps inevitably, much debate and discussion particularly from pharmacy students, past and present, and at student conferences about the structure and role of the examination (121,122,123). Most recently, at the 1997 RPSGB branch representatives meeting, there was a call for an urgent independent review of the examination, a motion which was carried (124). It was felt that the examination, particularly the closed book paper, was ambiguous and inappropriate. The consistent criticism in pharmaceutical press of the examination from recent candidates, tutors and other involved in the examination had partly prompted the proposal of this motion. However, after careful consideration to this motion, the Council of the RPSGB has decided that no action need be taken mainly because the examination has met the specification based on a working party's report which was the subject of wide consultation with members and students and that the examiners have been and are responsive to suggestions for incremental improvements to the examination (249).

At the same meeting, a second motion urged the Society to work towards incorporating an OSCE (Objective Structured Clinical Examination) as an integral component of the pre-registration examination. The motion stated that multiple-choice questions had some limitations as they could not examine skills, thought processes or professional judgement all of which were essential for the day-to-day work of a practising pharmacists. This motion was also carried (124).

The Council confirm that the use of OSCE as a tool for undertaking and quality assurance of competence assessment, and not the examination, of trainees by tutors will be analysed and explored for suitability (249). As discussed in Chapter Seven, it was felt that the OSCE format tests clinical competence and will not be suitable to test all aspects of knowledge gained by trainees in all branches. If this format was to be adopted, it would require 'extrapolation' to test knowledge, other than that of clinical-orientation. The current examination format is possibly favoured because it is economically and practically suitable to test knowledge of a large number of trainees. Although pharmacists and students were initially consulted about the introduction of the examination by a working party, the opposition to it currently stems mainly from those pharmacists who have sat the current format. A recommendation would be to ascertain the views of all pharmacists who have taken the examination on role, appropriateness, structure and suggestions for improvement of the examination.

8.4.11 Continuing education

The RPSGB defines continuing education (CE) as the 'ongoing learning that professionals need to undertake throughout their careers as a contribution towards the maintenance and enhancement of their personal development and professional competence'. It is the responsibility of individual pharmacists to relate their current personal levels of competence, knowledge and skills to those expected by the pharmacy profession. To help fulfil this responsibility, pharmacists are expected under the code of ethics to engage in a variety of methods of CE for at least 30 hours per year (250). Following this, the RPSGB developed a national continuing education syllabus for pharmacy, which comprises core and sectoral syllabuses for the main areas of practice (251, 252, 253). The debate within the profession as to whether the RPSGB should implement a mandatory CE policy has continued in recent years (254,255,256,257,258). It was recently announced by the President of the RPSGB, Mr. Peter Curphey, that the bones of a system of continuing professional development were already in place, and subject to RPSGB Council agreement, the system would almost certainly be mandatory (233). The present study shows that these pharmacists have no objection to self professional development and education being made an obligation. However, the format for monitoring or assessment of mandatory CE will require serious consideration.

A format of assessment of CE knowledge recently investigated in the Columbia State in Canada requires pharmacists having to pass an assessment of practice knowledge. If they do not pass, continuing education in specific areas is required before a licence to practice is renewed (259). Although this method was shown to be feasible and acceptable in this State, it would not be realistic to use for over 30,000 UK pharmacists as it will be too expensive and time-consuming. It would be more appropriate for individual CE providers in the UK to have their own formal assessment and monitoring procedures approved by the RPSGB. It was therefore important to determine participation of this study group in current CE. This would then provide an indication of the formats of CE most commonly used by these young pharmacists, and which may play an important role in mandatory CPD.

The present study group showed a very high level of participation of community-based pharmacists in CPPE distance-learning packages but lower involvement in the workshop sessions run by the CPPE. The high participation in CPPE distance learning courses in this study supports other studies which have shown this format to be a most useful method of CE (260,261,262). The CPPE annual report between 1993 to 1995 shows a consistently higher participation rate of community pharmacists in distance learning. In the 1994-95 year, over 50,000 distance learning packages were ordered by community pharmacists compared to just under 10,000 community pharmacists attending workshops in the same period (263).

However, a survey of all registered pharmacists in Scotland on their attitudes and participation to continuing education showed that 30% of respondents had completed SCPPE (the Scottish equivalent of the CPPE) distance learning packages and returned the accompanying MCQ assessment for a list of seven courses. A further 13% had completed the package but not returned the MCQ for assessment and 57% had partially completed the package (260).

This implies that ordering CPPE type distance learning packages does not necessarily mean that the pharmacist reads, assimilates and tests their knowledge for that package. If mandatory continuing education is to be introduced, then, formal monitoring of participation and assessment of knowledge would have to be introduced. For example, the CPPE would have to introduce these two concepts for their distance-learning packages.

This raises several concerns;

- a) Currently, voluntary assessment is sent usually with the CPPE package and relies on the participant's honesty to assess their knowledge without referring to the package. Compulsory CPPE assessment would have to either continue to rely on honesty or be conducted at examination venues around the UK. The practical and economic considerations are huge for the latter option.
- b) The assessments would have to be rigorously assessed for suitability and clarity with specific procedures for failed candidates.
- c) The RPSGB would have to define clear training objectives and disciplinary procedures for participants who fail to meet minimum requirements.

If compulsory CE is based on a minimum hours of participation a year, a formal recognition will be required for hours provided by all forms of postgraduate education. This includes branch meetings, conferences and university post-graduate courses. Many of these forms of CE provision including CPPE, provide participants with certificates recognising varying number of hours of CE participation. Each pharmacist may have to submit proof of this form of participation to the RPSGB annually.

The present study showed an extremely high participation of hospital pharmacists in employer-sponsored clinical diploma postgraduate courses, but very low participation of community pharmacists in any form of clinical-orientated postgraduate courses. The extremely high participation of hospital pharmacists (88%) in employer-sponsored clinical postgraduate courses indicates that the hospital sector has invested heavily to ensure that most if not all their new pharmacists attain knowledge in an area of fundamental need to a pharmacist from this sector. In fact, a survey of hospital vacancies has shown that applicants for junior hospital posts will be reluctant to accept a basic-grade position unless they are attached to clinical diploma courses (195).

The respondents from the community sector showed very low participation in either a clinical or community clinical diploma with or without employer sponsorship. However, from 1997, Boots the Chemists are 'drastically' increasing the number of their pharmacists taking diplomas in community clinical pharmacy. It is to fund 240 pharmacists to study for a diploma compared to 150 who had completed or were studying for one in the previous three years. The participation in the diploma will also be linked to a pay incentive (264).

The benefits of participation in this format of CE is that it is already monitored and assessed by the provider, usually a school of pharmacy. However, unlike the CPPE, there is no Government funding to run these courses. Because of a different funding mechanism for CE in Scotland and Northern Ireland, there are some variations in the forms of CE employed. In Scotland, in addition to the SCPPE, funding is also available for hospital and community pharmacists wishing to undertake postgraduate diploma/ degree courses. Since its inception in 1989, funding has been provided for 170 pharmacists to take up formal postgraduate degrees (260). In Northern Ireland, the CPPET also use pharmacy journals which will deliver learning credits to pharmacists developing professional education. For example, Northern Ireland pharmacists will be given 50 per cent funding for the C&D Community Pharmacy Certificate in community pharmacy management which costs £275 (265, 266).

This study found that just under half the community-based respondents read and assimilated the clinical section of the PJ regularly compared to 80% of hospital-based respondents. Of the community-based respondents, 80% regularly read the Chemist & Druggist. A recent survey of 1,100 community pharmacists found that 86% and 89% of respondents regularly read the Chemist & Druggist and continuing education articles in the PJ respectively (267). Both these journals represent an important medium of delivery of continuing education for pharmacists.

8.5 CONCLUSION

- Employment with multiple chain community pharmacy groups accounted for the largest number of pharmacists in this study group. The proportion of community pharmacist respondents in this study was exactly the same as that of the 1994 RPSGB survey of all UK pharmacists working in community pharmacy.
- The proportion of hospital pharmacists in this study was considerably higher than that of all UK hospital pharmacists in the 1994 RPSGB survey. This suggests that either the hospital sector have increased retention and recruitment of pharmacists or that a number of these pharmacists will leave this sector eventually.
- A majority of these pharmacists, particularly in the hospital and community sectors, were not satisfied with the awareness the public had of their role. In addition, a majority of community pharmacists felt their professional knowledge was not fully utilised in their current work environment.
- The organisational change with the most potential of improving the working environment of both hospital and community pharmacists was the employment of another full-time pharmacist. It is assumed that this would provide a greater opportunity to spend more time in advising patients and participating in extended roles. This would allow them to increase public awareness of their role and increase their knowledge utilisation.
- There was a strong agreement that future ownership of a pharmacy was becoming increasingly difficult. This opinion is probably based on the continuing expansion of a few large-chain multiple community pharmacy groups. The majority of hospital pharmacists in this study agreed that their prospects of progression within this sector were made more difficult by stagnation of hospital pharmacists in senior positions. This may precipitate the transition of more of these hospital pharmacists to other branches.
- There was a strong support by these pharmacists for introduction of mandatory continuing education.

- The results suggested that the majority of topics within the scientific component of a pharmacy course required no expansion in a four-year course. The only exception was Pharmacology. These views were based on the extent to which topics had been taught in their three-year course and were based on current knowledge requirements in practice.
- The clear conclusion derived from this section of the study was that greater consideration has to be given towards the expansion of clinical, practice and social-based topics in the four-year course.
- Currently, the pre-registration training year is in process of a reform which includes a broadening of competencies expected of all new registrants. The main consequence of this reform, as indicated by the RPSGB Council, is that some split of the total period between hospital and community practice may be essential. The results suggest that the provision of pre-registration training could be considerably improved if a trainee was given the opportunity to spend a three-month period in a second branch of pharmacy. This format should be considered in the reform process.
- The results from this study showed that the majority of hospital pharmacists were sponsored by their employers to participate in postgraduate courses of clinical orientation while most community pharmacists relied on their own motivation and enthusiasm for participation in continuing education, with a high utilisation of CPPE distance learning packages

CHAPTER 9

A comparison of results between the survey in 1992 and 1996

This chapter compares some results between the surveys in 1992 and 1996, described in Chapter Four and Chapter Eight respectively.

The 1992 survey used the majority of the whole population of pharmacy graduates who were just commencing their pre-registration training in 1992.

The 1996 survey, of all pharmacists who had been on the register for three years, included the majority of the individuals from the 1992 survey. A number of questions in these surveys ascertained similar information for which results have been compared.

9.1 The surveys

9.1.1 The 1992 survey

The methodology and results of this survey have been described in detail in Chapter Four. The population for this survey was all the new pre-registration trainees who had registered to train with the RPSGB by August 1992. A postal questionnaire survey was sent to 952 of these trainees, and there was a response rate of 73% (n=695).

The results from the following questions have been used in this chapter;

- Q1. 'Where are you working your pre-registration year?:'***
- Q3. 'When you decided to study pharmacy, in which branch of the profession were you most interested in working?'***
- Q17. Are you Male or Female?***
- Q16. How would you describe your ethnic origin?***
- Q6. 'Please state whether the total number of hours taught for each of these subjects should be more or less than at present.'***

This survey will be described as the 1992 study in this chapter.

9.1.2 The 1996 survey

The methodology and results of this survey have been described in detail in Chapter Eight. The population for the survey was the pharmacists who registered to practice pharmacy with the RPSGB in August/September 1993. The survey population included all the individuals from the 1992 study other than those who emigrated or failed to register as pharmacists in 1993. However, the survey population included a very small number of pharmacists who registered in 1993 but completed pharmacy education and training outside the UK. The results from this group of pharmacists have been omitted in this chapter.

A total of 911 questionnaires were originally posted which included 328 males (36%) and 583 female (64%) pharmacists. The total known valid sample size was 891, from which there were 558 respondents representing a 63% response rate.

The results from the following questions have been used in this chapter;

- Q2. 'State in which area you are currently working and indicate if it is full or part-time (less than 35 hours a week).'***
- Q17. 'Are you male or female?'***
- Q18. How would you describe your ethnic origin?'***

Q12. 'Using the knowledge you feel you use regularly, never use, lack or require more of in your current job as a guide, should the following subjects be expanded, contracted or left unchanged in the new four-year undergraduate course?'

The survey will be described as the 1996 study in this chapter

9.2 Comparison of branch proportions from 1992 to 1996

The results in Table 9.1 show a five-way comparison of the respondents from the 1992 study (Q1 and Q3), 1996 study (Q2) and the 1992 and 1994 RPSGB Manpower survey of all UK pharmacists (268,216). The 1994 RPSGB survey would include the pharmacists from the 1996 study.

9.2 (a) Community pharmacy

Based on the pre-registration training proportion, there was an increase in proportion of community-based pharmacists in the three years after registration. The percentage of community pharmacist respondents in the 1996 study is very similar to the percentage of all UK pharmacists in this sector. A simple comparison would suggest that at the time of choosing pharmacy undergraduate study, the majority of students interested in working in community pharmacy in the future actually undertook their training in this branch after completion of their education. After training, the majority of the community trained individuals have remained in this branch of practice as pharmacists.

9.2 (b) Hospital pharmacy

There is close similarity in the proportion of respondents who were initially interested in future hospital practice at the time of choosing pharmacy study (28%) and three years later in 1996 (27%) as hospital pharmacists. However, at variance with this, was the high percentage of respondents (38%) who actually trained in this branch. It suggests that more students undertook hospital pre-registration training than were accommodated as pharmacists in this sector after training. When the proportion of hospital trainees in the 1992 study (38%) is compared to that of pharmacists working in this sector in the 1996 study (27%), it can be seen that a considerable number of hospital trained pharmacists have left this sector within the first three years of practice. In 1992, a report indicated that the Secretary of the RPSGB felt that this imbalance should be maintained in the interest of the NHS pharmaceutical service as a whole. The main reason indicated, which is supported by these results, was that there was a significant movement of pharmacists between hospital and community pharmacy in the first five years of registration (200).

Table 9.1: Percentage of respondents from the 1992 study for the branch of initial interest for future work and branch of pre-registration training in 1992-93, from the 1996 study for work branch as a pharmacist and from the RPSGB manpower surveys of branch of work of all UK pharmacists in 1992 and 1994.

	% of respondents within each study				
	Community	Hospital	Industry	Split pre-registration, with 6-months in industry	Other
Branch of initial interest - 1992 study	55	28	10		7
Branch of pre-registration training - 1992 study	55	38		7	
Branch of work three years after training - 1996 study	61	27	3		9
Manpower survey of pharmacists 1992 (n=33,366)	63	15	5		17
Manpower survey of pharmacists 1994 (n=34,655)	61	16	5		18

Therefore, by training much larger numbers, there would be a better possibility of retaining an adequate number of newly-qualified pharmacists in hospital pharmacy. However, a view has been expressed that a number of senior hospital pharmacists do not see this imbalance continuing as there may actually be a reduction in number of trainees in this sector due to future funding arrangements (269). It is quite possible that many hospital-trained pharmacists voluntarily leave this sector immediately after registration. This is partly supported by a recent survey of hospital vacancies which found that Grade A and B pharmacist posts had the largest percentage of unfilled vacancies (195).

The 1994 manpower survey shows that 15% of all UK pharmacists worked in hospital pharmacy, which indicates that a further number of the 1996 respondents in hospital pharmacy will probably leave this sector later in their life.

9.2 (c) Industry-based pharmacy

A total of 10% of respondents from the 1992 study were interested in this sector as a future career branch when choosing pharmacy study. However, only 3% of respondents were actually working in this branch three years after registration. The 1992 and 1994 Manpower survey shows 5% of all pharmacists in the UK working in this sector (268,216). A number of the respondents in the 1996 study (n=32) were completing a PhD study, who may then work in the industrial sector.

9.2 (d) Other

In the 1996 study, only 7 (1%) respondents were not pursuing a career in a pharmacy related field. The remainder of the 'other' category included postgraduate study and pharmacy academia. However, in the 1994 RPSGB manpower survey, 18% of all pharmacists in the UK were in the 'other' category. Of these, 2% were in a non-pharmacy category and 12.5% in no paid employment (216). A substantial number in the latter category may be retired pharmacists. A view has been expressed that some pharmacists, typically about the age of 30, will leave the profession completely as it never meets their expectations (270). The 1996 study shows no evidence to suggest that these pharmacists, most of whom are under the age of 30, are leaving the profession.

9.3 Comparison of gender of those in each branch of pharmacy from 1992 to 1996

The results in Table 9.2 show a four-way comparison of male and female respondents from the 1992 study (Q1, Q3 and Q17), 1996 study (Q2 and Q17) and 1994 RPSGB Manpower survey of all pharmacists (216).

Table 9.2 shows the percentage of male and female respondents and the branch of pharmacy;

- a) of most interest for working in the future at the time of choosing to study pharmacy and pre-registration training from the 1992 study.
- b) of work three years after training from the 1996 study.
- c) of all UK pharmacists from the 1994 RPSGB Manpower survey (which includes respondents from the 1996 study).

Figure 9.1 and 9.2 shows the distribution of male and female respondents from these surveys respectively in community and hospital pharmacy.

9.3 (a) Male respondents

The results show that although 57% were initially interested in community practice, 69% of male respondents actually undertook pre-registration training in community pharmacy. The percentage of male respondents then remained fairly static at 68% three years after training. The RPSGB manpower survey proportion of all UK male pharmacists is fairly similar to the 1996 study proportions. Based on the results, this suggests that a similar majority of males trained in the community sector and will continue to work in this branch after registration.

The hospital sector attracted a smaller proportion and even smaller number of males compared to females during pre-registration training. A total of 60 males trained in hospital compared to 201 females in the 1992 study. However based on comparison of respondents in the two studies with the manpower survey, the proportion of males in hospital pharmacy continues to decrease substantially after completion of pre-registration training.

9.3 (b) Female respondents

The results showed a strong similarity in the percentage of female respondents initially interested in community (54%) and hospital (31%) pharmacy for future practice and the percentages working in these two branches (55%) and (32%) three years after training. There was however a substantial increase in female respondents (45%) who actually undertook their training in hospital pharmacy from the proportion who showed initial interest in this branch.

Table 9.2: The distribution of male and female respondents across different branches of pharmacy from the three surveys (each percentage expressed as % of total male or female number in each survey)

Key: m- male f- female	% of respondents within each sex					
	Community	Hospital	Industry	Split pre-registration, with 6-months in industry	Other	
Branch of initial interest for future work- 1992 study	m 57	22	11		10	
	f 54	31	9		6	
Branch of pre-registration training- 1992 study	m 69	24		7		
	f 48	45		7		
Branch of work three years after training- 1996 study	m 68	15	2		15	
	f 55	32	4		9	
Manpower survey of pharmacists 1994	m 63	10	5		22	
	f 59	23	4		14	

Figure 9.1: Distribution of male respondents in community and hospital pharmacy in the 1992 and 1996 study and the 1994 RPSGB Manpower survey

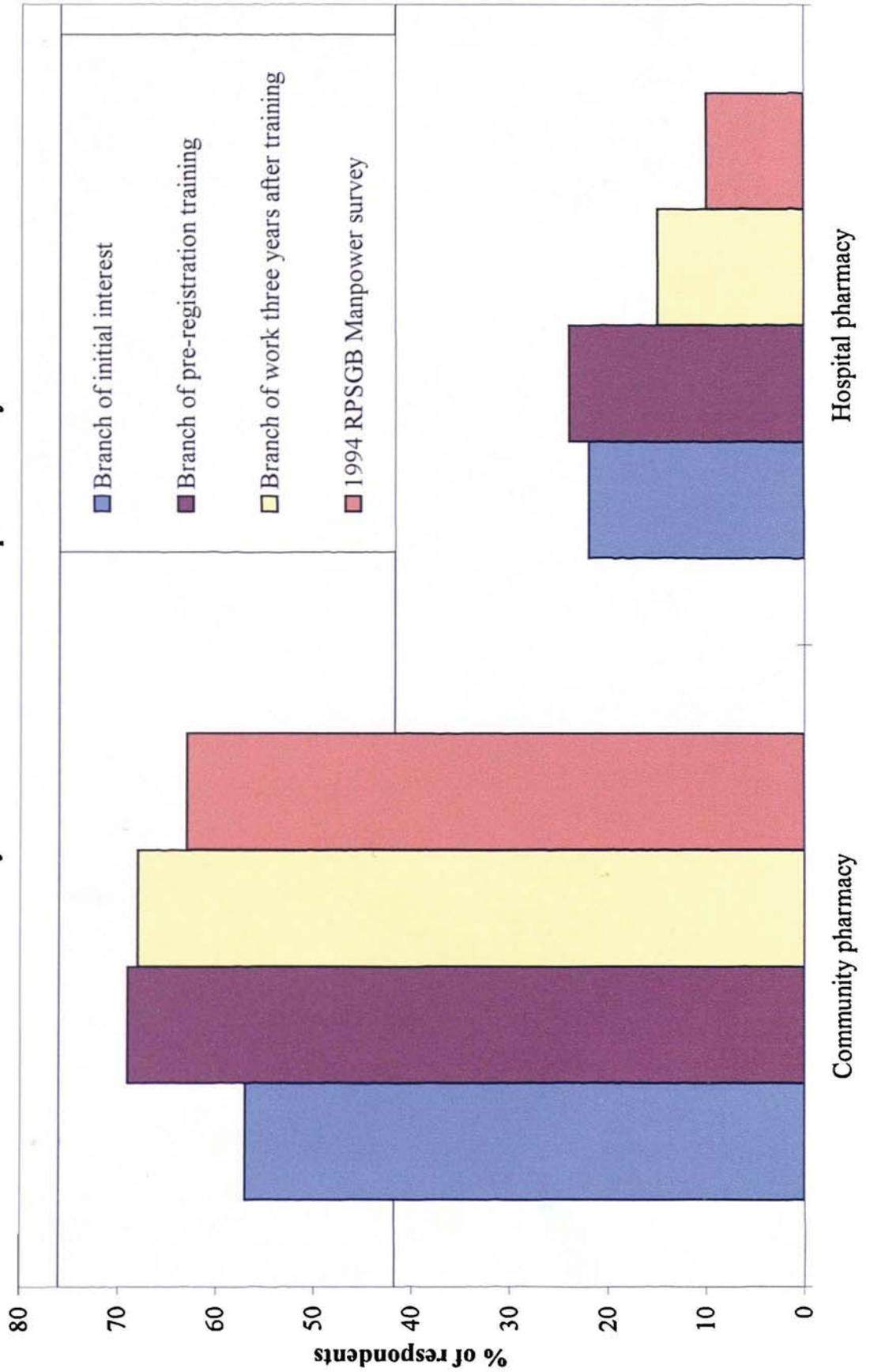
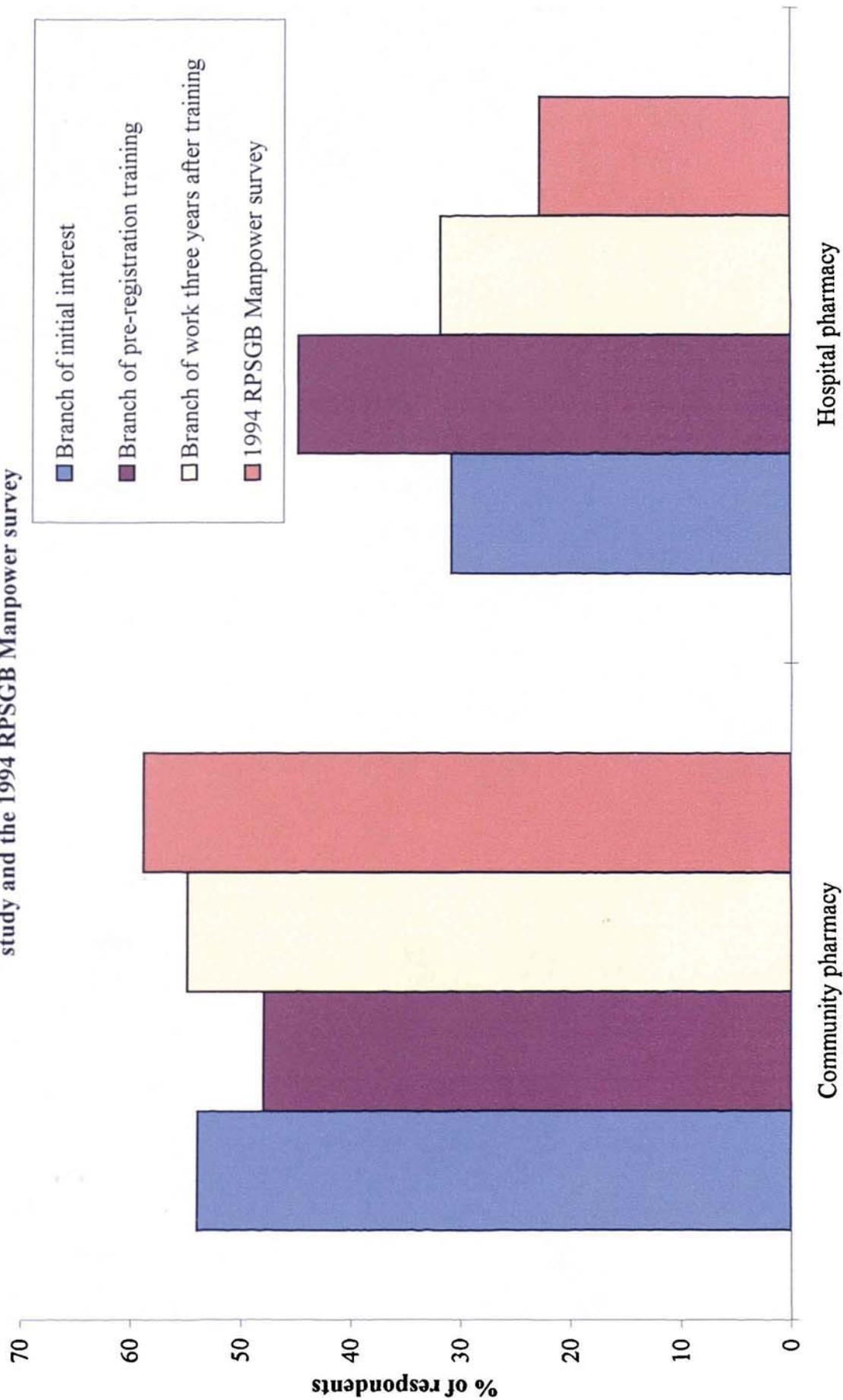


Figure 9.2: Distribution of female respondents in community and hospital pharmacy in the 1992 and 1996 study and the 1994 RPSGB Manpower survey



The proportion of females training was much higher than that of males in hospital pharmacy and much lower than that of males in community pharmacy. However, because females represented 64% of the total response rate from the 1992 study, the numbers of female respondent trainees were higher than males in both community and hospital pharmacy. In the 1992 study, 171 male compared to 215 female respondents undertook their training in community pharmacy and 60 male compared to 201 female respondents undertook their training in hospital pharmacy.

Based on the results in the 1992 and 1996 study, a substantial proportion of females left the hospital sector after training to join community pharmacy or pursue 'other' interests within the first three years of practice. Based on the respondents in the 1996 study and the RPSGB manpower survey, a proportion of females will continue to leave hospital pharmacy after three years of practice. However, females represent more than double the proportion of male pharmacists in hospital pharmacy in the RPSGB survey.

9.3.1 Discussion

There are several observations made from this comparison of male and female work proportions;

- a) For both the 1992 and 1996 study, females represented approximately 64% of the response rate (and total population). This means that the number of females training or working were almost double that of males.
- b) A much larger proportion (and number) of females, either through choice or through recruitment bias, trained in hospital pharmacy compared to males. However, this proportion will continue to decrease after registration.
- c) The majority of males trained and will continue to work in community pharmacy. A substantial proportion of males who trained in hospital pharmacy will leave the hospital sector after registration.
- d) A larger proportion of males compared to females had started pursuing other interests after registration and this proportion continues to increase, as observed in the RPSGB survey.

The 1994 RPSGB manpower survey of all UK pharmacists found that 68% of all full and part-time hospital pharmacists were female, of which 70% were under 40 years of age (216). A previous survey by Elworthy in 1988 found that women pharmacists were likely to work in full-time employment for 43% their careers compared to male pharmacists who were likely to do the same for 80% of their career (235). The 1994 manpower survey showed a substantial fall in the proportion of women after the age of 29 who continue to work full-time (216). Based on the comparative study in this chapter, it is therefore most likely that the hospital sector lose a large proportion of their full-time young pharmacists, as they are female. It is quite possible that this contributes to the well documented shortage of pharmacists in NHS hospitals in recent years (196,234,235). It is envisaged that a proportion of hospital pharmacy females will have a break in their career before returning to practice either on a full or part-time basis. Some of these will return to the community sector where part-time self employment is easily available. This suggests that the hospital sector have a responsibility to consider newer and flexible retention policies for their female pharmacists, who represent the main workforce in this sector. This may include part-time job sharing, on-site crèche facilities and flexible working hours.

9.4 Comparison of ethnic groups in each branch of pharmacy from 1992 to 1996

It is useful to observe any existing trends, as previously with gender, between different ethnic groups and their transition of branch from training to practice. For the purpose of this comparative study, the Black group comprise of Black-African and Black-Caribbean respondents. The White, Indian, Pakistani and Chinese respondents have been looked at individually and all other groups omitted for this comparison as they were too small to analyse properly.

Table 9.3 show a comparison of percentages of these five groups of respondents from the 1992 and 1996 study for pharmacy branch;

- a) of most interest for working in the future at the time of choosing to study pharmacy and pre-registration training from the 1992 study.
- b) of work three years after training from the 1996 study.

Figure 9.3 and 9.4 shows the percentages of different ethnic group respondents in pre-registration training and work three years after training in community and hospital pharmacy respectively.

Table 9.3: The branch distribution of respondents from each ethnic group from the 1992 and 1996 study.

Key:
92(I) – Percentages interested in that branch pharmacy for future work when choosing to study pharmacy (1992 study)
92(PT) – Percentages undertaking either a full-year of training in community or hospital or a 6-month period in industry in the 1992-3 year (1992 study).
96(P) – Percentages working in that branch three years after training in 1996 (1996 study).

	% of respondents in each ethnic group											
	Community pharmacy			Hospital pharmacy			Industry-based pharmacy			Other (e.g. PhD)		
	92(I)	92(PT)	96(P)	92(I)	92(PT)	96(P)	92(I)	92(PT)	96(P)	92(I)	92(PT)	96(P)
White	59	50	56	30	42	29	11	8	3	0	0	12
Indian	61	75	78	30	20	11	4	5	0	5	0	11
Pakistani	57	54	72	20	43	12	3	3	4	20	0	12
Black	50	67	69	50	33	23	0	0	0	0	0	8
Chinese	40	74	64	34	18	27	18	8	9	8	0	9

Figure 9.3: Respondents in each ethnic group showing initial interest (1992 study), undertaking pre-registration training (1992 study) and three years after training (1996 study) in community pharmacy

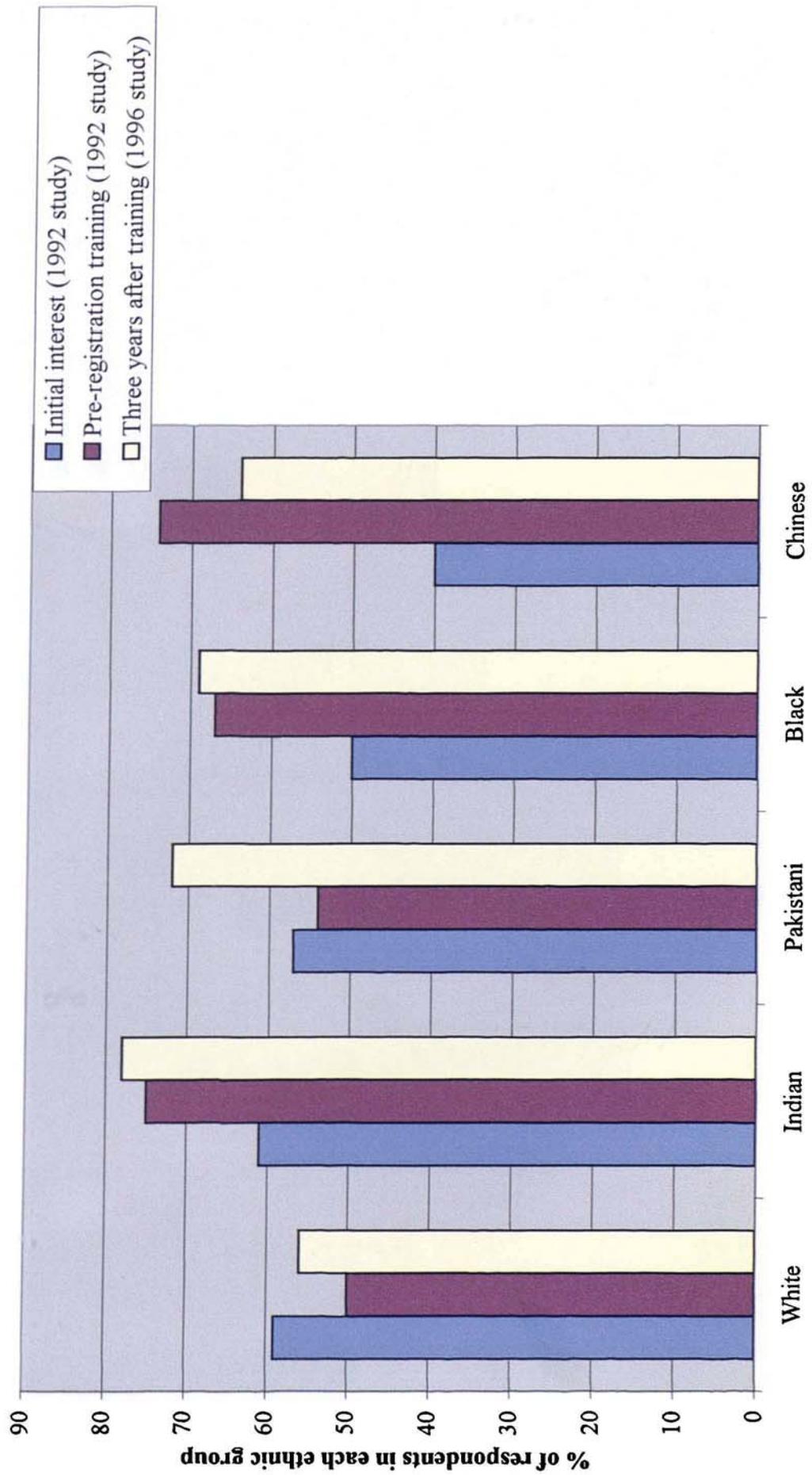
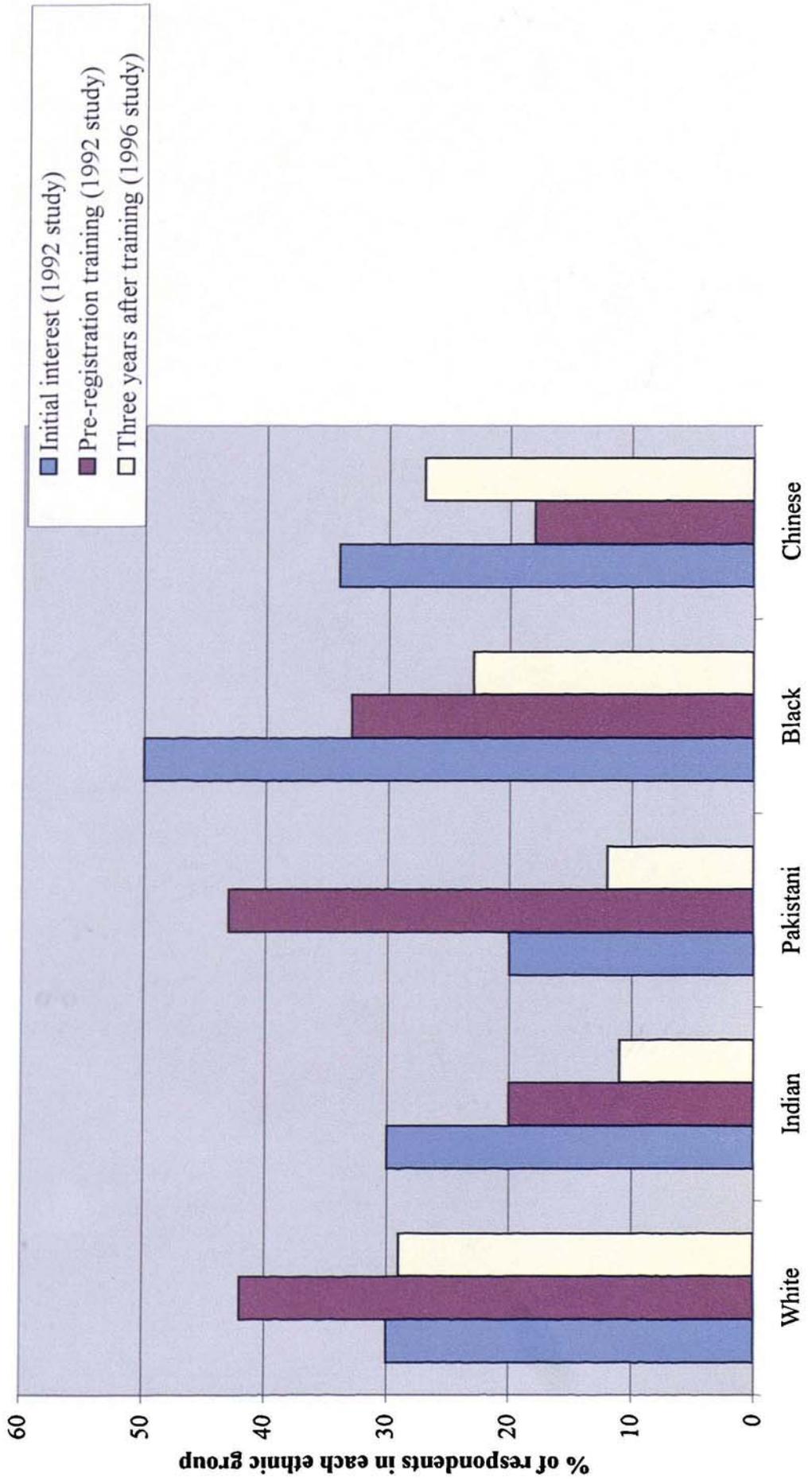


Figure 9.4: Respondents in each ethnic group showing initial interest (1992 study), undertaking pre-registration training (1992 study) and three years after training (1996 study) in hospital pharmacy



In the 1992 study, there were 489 White, 106 Indian, 30 Pakistani, 12 Black and 38 Chinese respondents. In the 1996 study, there were 419 White, 71 Indian, 25 Pakistani, 13 Black and 11 Chinese respondents.

The main reason for this comparative study of branch ethnic group distribution is to assess whether there are any distinctly different work trends which may be accounted by cultural differences. In addition, the recent NHS Executive report on pharmacy manpower in hospital pharmacy indicates that not enough is known about work trends of ethnic minorities in their sector (235). This comparative study may offer some indication of trends based on the two studies.

9.4 (a) Community pharmacy

The proportion of White respondents was fairly consistent in community pharmacy with 59% who initially showed interest in this branch falling to 50% in pre-registration training followed by an increase to 56% three years later in 1996. In both studies, the number of Indian respondents represents the second highest ethnic representation. Three-quarters of all Indian respondents trained in community pharmacy even though only 61% had shown an initial interest for future work in this branch at the time of choosing pharmacy study. There was then a further increase to 78% of Indian respondents three years after completion of pre-registration training. The 1996 study proportion of Indian respondents is much higher than the RPSGB manpower survey proportion of all UK community pharmacists (61%). The Black group shows a similar trend in community pharmacy to that of Indians. In 1992, the proportion of community Pakistani pre-registration trainees was similar to White trainees, but three years after training, the proportion of Pakistani community pharmacists had increased much more than that of White pharmacists. The results suggest that this substantial increase is mainly due to an influx of hospital-trained Pakistanis. The results of the Chinese group are difficult to analyse because 38 trained in 1992 and only 11 were working in 1996.

9.4 (b) Hospital pharmacy

In the hospital sector, a substantially higher proportion of White and Pakistani respondents compared to other group trained in hospital pharmacy. In addition, unlike the other groups, the proportion of trainees from these two groups had increased from the proportion which had shown an initial interest in future hospital practice at the time of choosing to study pharmacy. However, based on the 1996 study, a much greater proportion of Pakistani respondents had left this sector after training compared to White respondents.

The same proportion of White and Indian respondents (30%) initially expressed an interest in hospital pharmacy for future work at the time of choosing pharmacy study. However, only 20% of Indian respondents actually undertook training in this branch compared to 42% of White respondents. Whereas the percentage of White respondents in hospital pharmacy in 1996 was very similar to the proportion who had shown an initial interest in this branch for future work, the percentage of 1996 Indian hospital pharmacists is approximately one-third of the proportion who had shown an initial interest in this branch. In the 1996 study, the Indian respondents represented the smallest proportion working in hospital pharmacy three years after completion of training..

9.4 (c) Industry-based pharmacy

Although 4% of Indian respondents were initially interested in working in industrial pharmacy at the time of choosing pharmacy study and 5% actually undertook a 6-month training period in this branch, no Indian respondents were working in the pharmaceutical industry in 1996. No Black respondents showed an initial interest in this branch, spent a 6-month period training in industry or were working in this branch in 1996, three years after training.

9.4.1 Discussion

There are several observations from the comparative study of ethnic groups;

- a) In community pharmacy, only non-White respondents showed an increased proportion working as pharmacists three years after training in comparison to those who had initially expressed an interest in this branch for future work. A survey by Hassell of graduates from one school of pharmacy over a 10-year period found an even larger disproportionate representation in community pharmacy in that 57% of 'non minority' pharmacists were working in community pharmacy compared to 87.5% of 'minority' pharmacists (164).
- b) In hospital pharmacy, only in the case of White respondents was there similarity between the proportion who had expressed an initial interest in future work in this branch and the proportion working as pharmacists three years after training. In the case of all the non-White respondents, there was a much lower proportion who fulfilled their initial intention to work in this branch. The survey by Hassell shows that of the 'non minority' group, 31% worked in hospital pharmacy compared to only 7.5% of 'minority' pharmacists working in this branch (164).

It is therefore possible, based on the survey by Hassell, that non-White respondents from the 1996 study will continue to leave hospital pharmacy to join the community sector.

It is important to consider some possible reasons for these observations from this comparative study;

- a) The undergraduate course structure changes the initial interest of non-White respondents as they realise their ability is better suited to community practice.
- b) The non-White pharmacists enter community practice where not only are there better remuneration prospects but also of being self-employed or owning a pharmacy. In the 1992 study, ethnic minority respondents had attached greater value than White respondents to owning a business as a reason for choosing pharmacy study (Chapter Four). Similarly, this factor was a very important reason for minority groups choosing pharmacy in the Hassell study (164). It has also been proposed that Asians may be attracted to pharmacy because of the appeal of being self-employed (271). Furthermore, an explanation identified in the sociological literature for the attraction of business to ethnic minorities is that entrepreneurial success is culture bound i.e. that certain ethnic groups have an innate ability that attracts them to business (165).
- c) There is some form of discrimination towards some 'non White' respondents especially during hospital pre-registration recruitment. The survey by Hassell suggested that there was some evidence of discrimination as more than twice the proportion of minority pharmacists, compared with non-minority pharmacists, had experienced difficulty obtaining a pre-registration post.

9.5 Comparison of extent of teaching of undergraduate course topics from 1992 to 1996

The 1992 study had ascertained opinion of recent graduates on the allocation of teaching time of syllabus topics in the three-year undergraduate course. The 1996 study group had been practising as pharmacists for three years and opinions of this group on syllabus content of topics for a now formally introduced four-year course based on definite knowledge requirements in practice were ascertained.

Figure 9.5 shows the percentage of respondents who supported a reduced time allocation in the 1992 study and content contraction in the 1996 study for each topic. Figure 9.6 shows the percentages who supported an increased time allocation in the 1992 study and content expansion in the 1996 study for each topic. Figure 9.7 shows the percentages who felt content was sufficient and required no change for each topic from both studies.

Figure 9.5: Percentage of respondents supporting a decreased allocation of teaching time to various syllabus topics (1992 study and 1996)

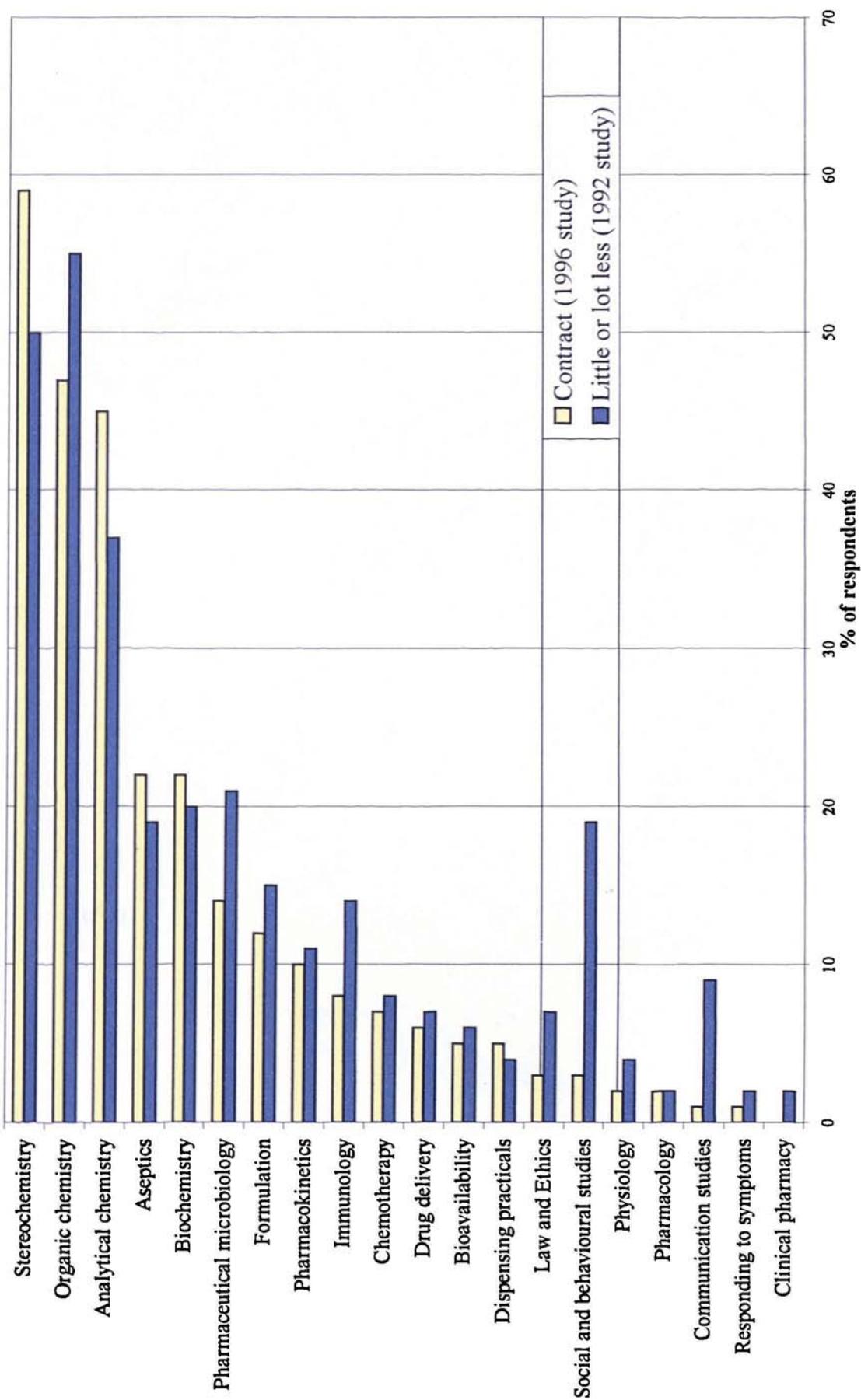


Figure 9.6: Percentage of respondents supporting an increased allocation of teaching time for various syllabus topics (1992 study and 1996 study)

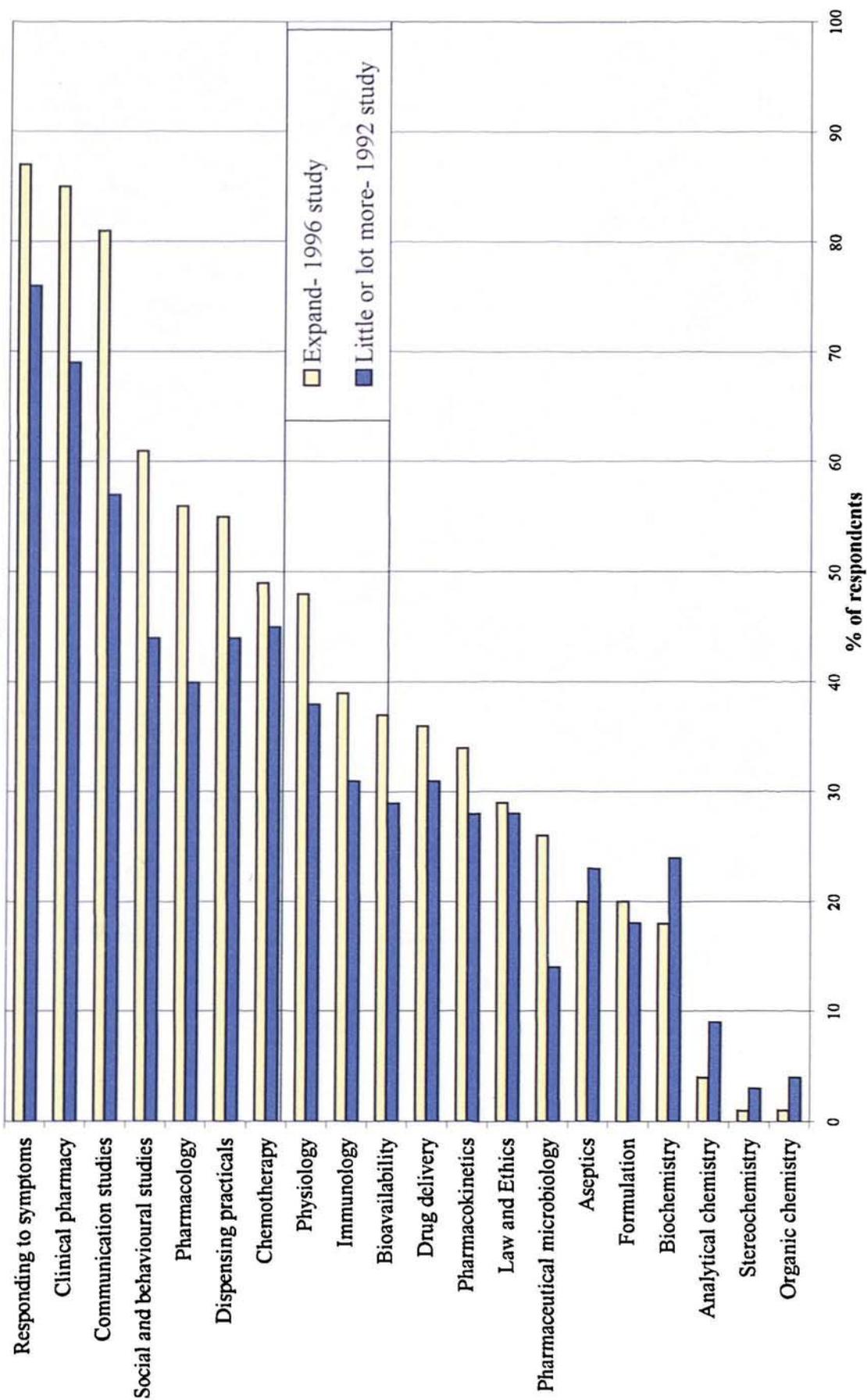
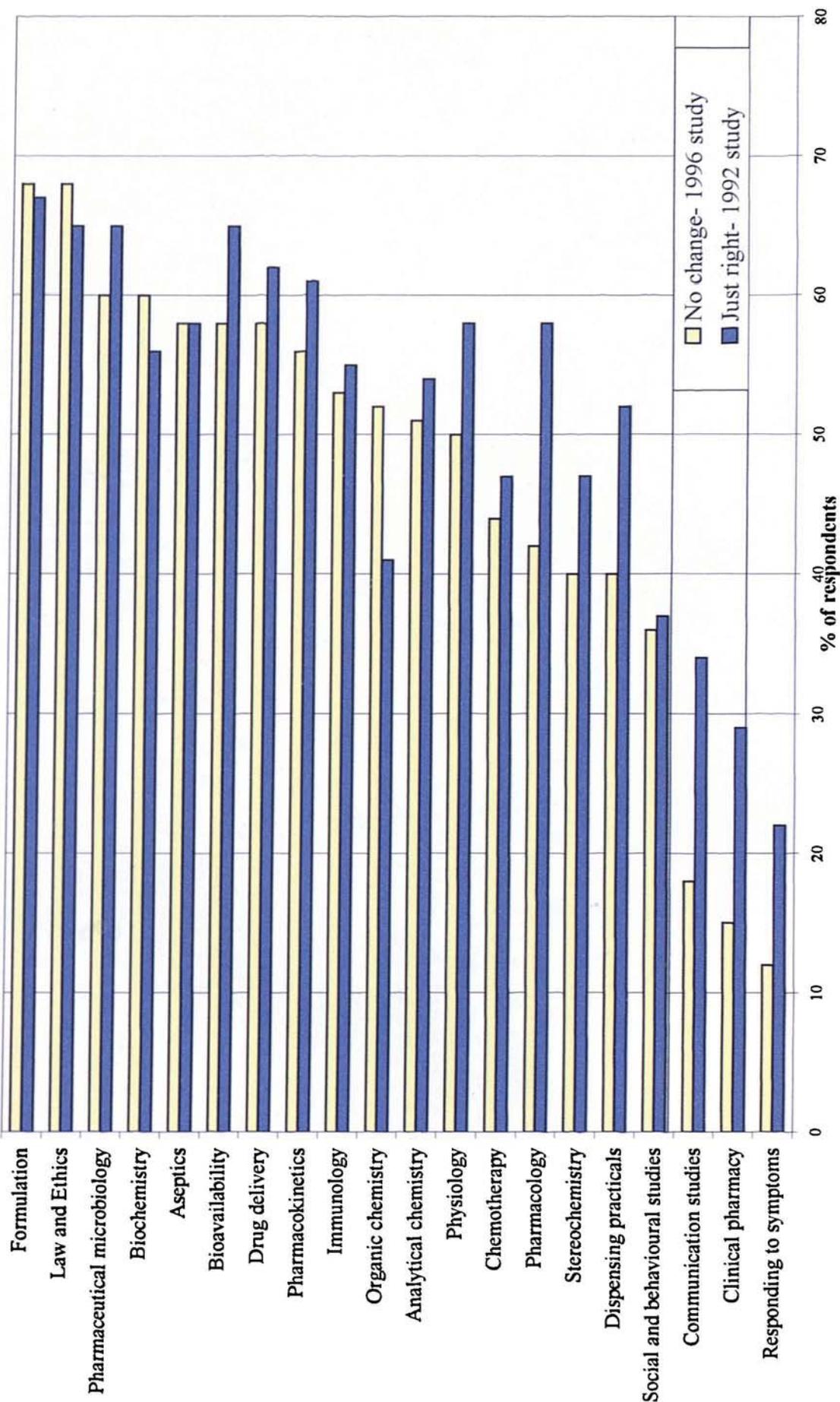


Figure 9.7: Percentage of respondents that consider there should be no change in time allocation of various syllabus topics (1992 study and 1996 study)



In 1992, only in the case of a few syllabus topics was there a majority response supporting an increased time allocation. These topics were from the Pharmacy Practice area and were 'communication studies', 'social and behavioural studies', 'clinical pharmacy' and 'responding to symptoms'. In the 1996 study, these four topics attracted even stronger support for expansion in a four-year course. The 1996 study showed a majority who supported an expansion of 'dispensing practicals' and 'pharmacology' in a four-year course, both of which had been deemed sufficient by a majority in the three-year course in the 1992 study. In the 1992 study, only in the case of 'organic chemistry', 'inorganic chemistry' and 'stereochemistry', was there a majority response supporting a reduced time allocation. These topics were all in the area of Pharmaceutical Chemistry. In the 1996 study, only in the case of 'stereochemistry' was there a majority support for contraction in content. The topic 'inorganic chemistry' was not included in the 1996 study. As in the 1992 study, a majority of respondents indicated that no change was required for content of all topics within the area of Microbiology and Pharmaceutics, except for 'chemotherapy'. This topic had been placed under the subject area of Clinical Pharmacy in the 1996 study and a majority supported an expansion of this topic in a four-year course.

9.5.1 Discussion

The respondents from the 1992 and 1996 study showed strong similarity in opinion on the nature of change required in allocated teaching time or content for almost all syllabus topics. Despite the fact that the 1992 study ascertained opinions on a three year course and the 1996 study on a four-year course, a majority in both studies supported an increased allocation of teaching time and content for most of the clinical, social and practice-based topics. The similarity in opinions between the two studies indicates that the 1992 respondents were suitably aware of their future knowledge requirements. This is because the 1992 study had ascertained the change required in allocation of teaching time for topics based on knowledge requirements in future practice whereas the 1996 study ascertained change based on knowledge required by pharmacists who had been practising for three years.

CHAPTER 10

OVERALL CONCLUSIONS

This chapter presents the overall conclusions of the thesis. It focuses on areas where the results of the surveys relate to pharmacy undergraduate education, pre-registration training and continuing education. In addition, some observations of the training and work branch patterns of pharmacy graduates from the results are considered. Finally, the chapter provides some recommendations for these aspects based on the results and lists areas requiring further investigation.

The fact that after graduation, a majority of pharmacy graduates serve the public means that consideration should be given to the method of selection of aspiring pharmacy students. The desire to provide health care as an expert on drug use, which is effectively the primary occupation of a pharmacist, was regarded as the most influential factor in choosing to study pharmacy. In addition, previous ability and interest in school chemistry was a very influential factor. The subject area of chemistry has been a cornerstone of pharmacy since the early development of the profession. The advancement of chemistry and pharmacy is one of the principles in the founding charter of the profession. In addition this subject area is also considered as a compulsory requirement at A or H-level for studying pharmacy and occupied the highest proportion of contact hours in the three-year course. It is therefore obvious that any school student who has ability or interest in this topic, will find that pharmacy appears as an obvious vocational qualification in prospectuses or promotional literature. However, in addition to school chemistry, the personality and attitudes of school students are important factors of consideration. The 1996 RPSGB consultation document, 'The New Horizon', indicates a wide variety of roles in which pharmacists should be involved in the future. This document was published after more than 5,000 pharmacists responded to the invitation to take part in Pharmacy in a New Age, a consultation on the future of the profession into the next century (272). Many of the roles will involve the pharmacist in services outside the pharmacy itself including patient's own homes, clinics and surgeries. Pharmacists will also be expected to develop greater inter-professional liaisons and working relationships (272).

In addition to academic ability, it is therefore important that an aspiring pharmacy student has a caring personality, confident nature and positive attitude or ability to adapt to diverse or changing situations. There are two ways that these innate traits can be identified in a school student by each school of pharmacy. These are;

- a) for all schools to hold personal interviews of students applying to study pharmacy at their university. Currently, only a number of schools interview prospective pharmacy students.
- b) subject all aspiring pharmacy students to a recognised psychometric or aptitude test. These tests can be designed to identify these type of traits in individuals and have been used in the USA to study attitudes of students entering pharmacy study (68).

The influence of career advisers or sessions at school had little influence in motivating the trainees to study pharmacy. This is an important method of career information dissemination and a suggestion would be for local pharmacy branch groups and schools of pharmacy to orchestrate career sessions in all local schools and colleges offering university entry education.

A major finding of this study, was for an increased content, teaching and emphasis on clinical, social and practice-based topics, and, no change to any of the scientific topics, except pharmacology, in a four-year course. Pharmacology was seen as the only scientific subject requiring an expansion in a four-year course. However, pharmacy is primarily taught at undergraduate level as a scientific discipline. This is partly because it is funded as a science-based subject which ensures a higher income to each institution. The present system of funding means that there will continue to be a greater emphasis on the scientific areas and any increase in this vocational content may be limited. One of the primary challenges in pharmaceutical education is to create a suitable balance which allows development of vocational knowledge and skills and yet maintains an adequate scientific base. Arguments to focus pharmacy undergraduate education solely on vocational aspects may risk funding of pharmacy as a science subject and reduce recognition of pharmacists as a scientific expert on drugs. On the other hand, education which over-emphasises the scientific element may produce graduates incapable of adopting extended and new roles for the pharmacist.

However, there are several issues which require consideration in a four-year course;

1. Increasing relevance of scientific content to practice

The 1986 Nuffield Committee of Inquiry recognised the importance of the scientific content of the course, but, felt that its' teaching must be applied in that it would be relevant to pharmacy and must relate to all aspects of the work, behavioural and pharmaceutical (16). In 1994, the Steering Committee on Pharmacy Postgraduate Education (SCOPE) also recommended that undergraduate education should highlight the relevance of the pharmacy degree course to subsequent employment (206). In addition, the broad RPSGB guidelines for the four-year course recommend a greater integration and relevance of the pharmaceutical sciences (4). Some methods of increasing this relevance have been discussed in the thesis. For example, pharmaceutical chemistry can be taught using a concept of teaching termed Structurally Based Therapeutic Evaluation (SBTE) of drugs (169).

This concept emphasises the relevance of chemistry to the practice of pharmacy and has been discussed in this study. Another method of increasing the relevance of science to practice is for consideration to be given to selecting a number of drugs or therapeutic classes of drug and designing a teaching programme so that for each, the chemistry could be taught, followed by the pharmacology, pharmaceuticals, clinical use and supply. However, all academics should endeavour to have an awareness of the changing roles of pharmacists in practice in order to keep their teaching up-to-date. In addition, the teaching organisation of each scientific subject area could be conducted with the presence of pharmacist academics or teacher-practitioners who can provide a 'quality assurance' of the relevance of topics to pharmacy.

2. Increasing the vocational content of the course

Recent governmental and RPSGB policies indicate an inevitable changing of the role of a pharmacist. Increasingly, there is less emphasis on the traditional supply function, but, more on an advisory or facilitative role. The RPSGB consultation document, 'The New Horizon', indicates a wide variety of roles involving the pharmacist in services outside the pharmacy itself including patient's own homes, clinics and surgeries (272). The NHS Executive document 'Primary care: The Future' suggests that undergraduate education for health care professionals should 'cover explicitly the problems which occur in primary care settings; and should increasingly be located in primary care to reflect where most patient contact takes place' (273). The recent White Paper 'The New NHS' indicates that the Government intends to establish Primary Care Groups across the country, bringing together GP's and other health professionals in each area to work together to improve the health of local people (274). The White Paper acknowledges the need to extend and develop opportunities in primary care. To this extent, the pharmacist will have an important role in offering prescribing advice to practitioners, developing relationships with other members of the Primary Care Groups and extending their service to the public outside of the pharmacy. One of the aims of the latest Green Paper 'Our Healthier Nation, A Contract for Health' is to improve the health of the worst off in society and to narrow the health gap. The Green Paper strongly emphasises the need for health professionals to educate the public on health lifestyles and thereby reduce the incidence of diseases such as heart disease, stroke and cancer (275). These governmental priorities must be reflected in undergraduate education. In medical education, some of these priorities are now reflected as radical changes have been made in undergraduate education, some of which were discussed in Chapter One.

In medicine, there has been a reduction in emphasis on some scientific areas and more on social medicine. The General Practice Departments in some of these schools have expanded and more staff in these areas recruited. A medical student is now taught much more about medicine and its' impact in primary care and also spends more time learning in primary care settings such as GP surgeries. The pharmacy student has to be given an awareness of these issues in the vocational element of the course. The student also needs to be exposed to the role of the pharmacist in a primary care setting. The course should provide the knowledge base required for these new and challenging roles. After that, it is then upto individual pharmacists to attain further knowledge in specific areas and develop role-specific skills.

The 1992 and 1996 study both showed a strong support towards the increased emphasis, allocation of teaching time and content of clinical, social and practice-based topics for both the previous three and new four-year course. The strength of support from this study means that the vocational content should be given more consideration in a four-year course. However, as previously discussed, a balance has to be struck between the scientific and vocational content, which from the results of this study had not been achieved.

3. Staffing considerations

The four-year course provides an ideal opportunity to re-design the course and incorporate many of the changes discussed, to produce graduates who are capable of implementing many of the views expressed in the 'New Horizon' and recent government documents. However, one of the major constraints to developing the course may well be related to staffing and personnel in academia. At a recent Council meeting of the RPSGB, a Council member commented that teaching staff in schools of pharmacy were already subject to an increased workload as a result of 50 per cent increase in students in some cases. One area of particular concern mentioned was that it was becoming increasingly difficult to recruit pharmacist academics, and as pharmacy practice teaching has to use pharmacists, this would be an area of concern, particularly if this subject area was significantly increased in an extended course (276). One of the bigger challenges facing academia is that it is increasingly difficult to recruit pharmacists into specialised science areas. Many universities now operate a policy whereby an appointment will made of the best qualified person for that post. Therefore, it is likely that the posts in many of the scientific areas will be offered to people who have undergraduate and postgraduate education in a specific area e.g. chemistry, biochemistry, molecular biology.

Some further areas of staffing requiring consideration are;

1. Staff may be reluctant to devoting much time to course re-organisation as it affects their research activity, which is how their status is judged both by the research selectivity exercise and for future promotion.
2. From the author's observations, some current pharmacist academics have not practised outside of academia for years and their input towards increasing relevance of courses to practice may be minimal.
3. Currently, the pharmacy practice section of many schools represents the smallest staffing group in the school, but, many of the changes would affect this area of teaching.

The obvious solution is for schools to continue to develop links with community employers, hospitals and industry to create more teacher-practitioners funded mainly by these bodies. For example, the first-ever NHS funded teacher-practitioner post has been set up at Aston University, Birmingham (277). These types of appointments will be very useful to the provision of pharmacy education.

The use of problem-solving skills was considered to be the most useful form of learning by respondents. This method ideally involves small groups of students for effective teaching and can be used to reinforce teaching provided through didactic formats. It is an effective method of learning for a student as it enhances understanding and deep-learning. Problem-based learning (PBL) is now used extensively in medical education, particularly in clinical medicine. This area can be adapted to teach all elements of pharmacy but does have repercussions on student and staffing numbers. The use of problem-based or computer-aided learning (CAL) encourages self-study and greater self-responsibility for improvement in the student. This form of learning can instil an ethos of self-motivation in the student to pursue lifelong learning and professional development. At the time of the 1992 study, approximately one-third of the trainees in this study had not used CAL and from the trainees who had used CAL, there were mixed responses regarding its' usefulness as a learning method. Since then, increasing numbers of sophisticated and interactive computer packages have been developed specifically for pharmacy education. An increased use of CAL at undergraduate level would facilitate its' use in postgraduate education. For example, the pre-registration tutors in this thesis did not place a high preference on the use of CAL in postgraduate education probably because they have had little or no exposure to this method in education and practice. The students currently graduating will have more confidence and ability in accessing CAL programs during practice, as they will have used this format at undergraduate level.

In the current climate of an increasing staff-student ratio, the use of CAL should be promoted. Although the initial equipment outlay is costly, this method of learning does not require intensive staffing. The CAL programs are usually self-explanatory and can be followed by students with minimal supervision. In contrast, PBL using small student groups is staff and time intensive. From this study, PBL would be most useful in clinical pharmacy.

In principle, the present study (Chapters Four and Six) found that recent graduates supported the concept that one of the objectives of training should be as an application of knowledge gained at undergraduate level in. However, in reality, there was no clear support that this was actually happening during training (Chapter Five). Two of the concerns the Nuffield report expressed regarding the pre-registration year was that the year had been designed in isolation from the content and structure of the degree course and schools and teachers from the schools of pharmacy should have a more active role in the discussion of the ground to be covered by the training year (16). Currently, it appears that the pharmacy course and training year are designed independently with one having very little influence on the other. For example, the study shows that a number of the issues tested in the pre-registration examination have been taught and assessed at undergraduate level. The four-year course provides the opportunity to increase the relevance and application of education to the training year. Similarly, during training, the assessment of competencies should incorporate the trainee's utilisation of scientific and practice-orientated education. However, increasing interaction can only be achieved if academics are allowed to have an influence on the training year, and vice-versa, pre-registration tutors can influence the provision of the course.

This study supports the above views of Nuffield and offers three recommendations;

- a) A body of 'grass roots' academics, not Heads of Schools, should be appointed to review the training year, with particular regard to areas where undergraduate education application can be increased. Conversely, this can also provide useful ideas for improvement to the course itself.
- b) Consultant academic tutors should be appointed from each school of pharmacy. Their primary role would be to help pre-registration tutors and trainees. This help could be provided as and when required in areas of academic knowledge requirement.
- c) Each school should appoint an advisory panel consisting of pre-registration tutors from each branch who can review the syllabus and offer advice for future curriculum developments.

The development of an interactive relationship between education and training is an issue requiring immediate consideration.

The cohort of trainees and subsequently pharmacists surveyed in this group were the first to sit the pre-registration examination. There were two main findings in this study on this aspect, both of which are fairly contentious issues.

1. There was little guidance provided by tutors on ‘must know’ topics.

The primary ‘bone of contention’ is the extent to which the examination and training are linked and the extent to which a tutor can guide the trainee on examination issues. The survey of tutors indicated that they had no definite opinions on the examination aspect which suggested that they had little involvement in this area. This is confirmed in the 1997 pre-registration manual which states that the tutor assesses practical and professional skills while the examination tests knowledge, the application of knowledge and professional cognitive skills (108). Since the study, the syllabus for the examination has been re-structured so that most of the ‘must know’ topics are now termed ‘essential for day to day practice’. In addition, there is a clearer description of the syllabus and the objectives, format and assessment of the examination. These changes should help the trainee in preparation for the examination. As the syllabus terminology suggests, the knowledge tested in the examination and the application of this knowledge in practice is inextricably linked. It is therefore the author’s opinion that tutors should be instructed to assimilate the examination syllabus so that better guidance can be given to the trainee. For example, a tutor who is fully aware of the syllabus can utilise existing or create new problem-solving scenarios which would encourage the trainee(s) to apply knowledge from essential examination topic areas. This would enhance the ability of the trainee to recall this knowledge in the examination. Alternatively, a tutor or trainer should only be allowed to perform this role after they have been assessed by the RPSGB on their knowledge of the examination syllabus and competences. This could take place as an oral examination or interview of a prospective tutor. Currently, the minimum criteria to be a tutor is three years post-qualification practice, which can be argued as not being a rigorous selection process.

2. From the 1996 study, 73% of the respondents felt some or significant improvement could be made to the training year if the examination comprised of a practical observation of skills and an oral test.

There has been, perhaps inevitably, much debate and discussion particularly from pharmacy students, past and present, about the structure and role of the examination (120,121,122,123,124). The format suggested above which was given to the respondents to consider in Chapter Eight would be impractical and expensive to carry out and possibly a repetition of competency assessment. Other alternative formats suggested such as the OSCE (Objective Structured Clinical Examination) would also be expensive and difficult to carry out on a large scale. OSCE tests clinical competence and may not be suitable to test all aspects of knowledge gained by trainees in all branches. If this format was to be adopted, it would require 'extrapolation' to test knowledge, other than that of clinical-orientation. The current examination format is favoured because it is economically and practically suitable. One aspect that requires investigation would be whether it may be more appropriate to have one generic examination paper, similar to the current closed book format, and one paper specific to the branch(s) of training. The practicality and appropriateness of this format would require consideration. This type of an examination would then actually relate to the knowledge gained by a trainee in the training year, rather than knowledge gained simply through cramming relevant general reference material.

These two findings present several issues requiring further consideration;

- a) Currently, there is no system to recognise the extent the tutors help prepare their trainees for the assessment of their knowledge base via the examination. In addition, as previously discussed in this study, there is little guidance for or emphasis on the tutor on involvement in their trainee's preparation for the examination.
- b) The pre-registration examination may be considered as a repetitive assessment of knowledge as the RPSGB already accredit the undergraduate pharmacy program as the prerequisite knowledge base. This raises the concern that the examination was introduced because either the RPSGB were not fully satisfied with the quality control methods employed in undergraduate education or because there were other motives, such as having a further means of controlling pharmacist numbers and wanting to be an examining body.

- c) The examination continues to create debate on its role, structure and appropriateness. This issue has been discussed in length in Chapter Eight. The main concern raised is that the examination is testing knowledge gained from or applied in a practical work setting which makes it difficult to separate theory from practice. It should be considered whether a rigorous competence-based assessment scheme should be the sole method of testing a trainee. This method tests practical ability and with further improvement, can also test practical utilisation of knowledge. It may also be possible to incorporate an OSCE format of examination within certain competencies. However, quality assurance and training of all tutors and trainees would have to be introduced before this method could be wholly reliable and consistent.

This study found that the introduction of competency training had generally been well received in the first year by tutors from the community sector. Competence is described as 'the ability to perform consistently to the required standard'. A competence-based training programme defines the standards expected, which makes it easier for tutors to identify those areas in which performance is acceptable. The new training programme was designed to assess those aspects which every newly-registered pharmacist must be expected to perform, together with experience specific to each sector of practice for which no assessment of competence was required (109). In hindsight, the study should have included 'assistant tutors' (trainers) from the hospital sector, who would have provided more accurate views on the role and suitability of competency in hospital training. The hospital 'assistant tutors', selected mainly as they were the expert pharmacist in a speciality, had an extremely important role in supervision, assessment of competency and appraisal of trainees. The study suggests that they would have a greater daily interaction with the trainee and probably, a more important role in provision of training than the registered tutor. There were three findings which raised concern about competence-based training and assessment in its' first year of inception;

1. Community tutors felt it was difficult to accomplish effectively due to time constraints caused by other day-to-day work duties (Chapter Seven, p202).

Unlike other sectors, the community tutor will usually have direct supervision and training responsibility for their trainee in addition to a host of other duties. It is also possible that this format of training and assessment does not favour tutors who have little or no company or employer support.

In particular, tutors from the independent community sector may be at a disadvantage. As this was the first year of competency, it is possible that tutors are now better equipped and experienced to carry it out effectively despite work constraints. The 1997 training manual is a considerable improvement to the 1993 one, and offers advice and guidance on carrying out the training role effectively within the normal daily work routine.

2. Little or no training of ‘assistant tutors’ in the hospital sector to carry out competency assessment.

In fact, other than a one-day course organised by the RPSGB, there is no uniform method of training tutors and assistant tutors to conduct competence-based training and assessment. In addition, there are no formal quality assurance mechanisms in place to ensure an acceptable level of training supervision. The 1997 training manual recommends NVQ work-based assessor courses which would help tutors and assistants understand the concept of competency, adapt it to their workplace and carry it out effectively. Within this qualification, D32 and D33 (discussed in Chapter Two) are two units which can be taken on their own and are specifically designed to formally demonstrate competence at assessing trainees in the workplace. This recommendation is voluntary and requires the participant to pay their own fees for the course. The author therefore recommends that gaining these two units be made a compulsory requirement for all pharmacists wishing to register as tutors or ‘assistant tutors’ (trainers) for the first time. It is important that competency-based training is carried out effectively, and that the tutor or trainer can make a reasoned and accurate judgement about the trainee’s ability to perform to a required standard consistently. Otherwise, the system would be no different to that previous to 1993. In addition, consideration must be given to introducing a quality assurance system for tutors and assistants which should include mandatory continuing professional development and feedback from individual trainees.

3. Assessment of sectoral experience section

Currently, there is no formal assessment of this section of the training manual. This study showed that tutors, particularly from the hospital sector, had felt that some of the areas in this section represented core pharmacist functions and should therefore be included in competency assessment. Currently, the RPSGB is reviewing competency training with a view to moving to a set of enhanced competences to be expected of all new registrants. It is possible that some of the sectoral experiences may be covered in this re-structuring. A suggestion would be for hospitals to adopt an objective structured clinical examination (OSCE) technique to assess some of the clinical specialities included in the sectoral section of the manual.

The debate for a split training year has continued for many years, mainly supported by the BPSA. Some form of a split training scheme was strongly supported by respondents in both the 1992 and 1996 surveys. In the latter survey, the split scheme favoured would involve a three-month period in a second branch of pharmacy. The RPSGB have indicated that as a consequence of the new enhanced competency system some split of the total period between hospital and community practice may be essential since a broader range of competences may not be easily obtained in one sector alone (17). This would be welcomed based on the findings in this study. There are many benefits to introducing a split training scheme for all trainees. Some of these are that;

1. it would give some trainees the confidence and ability to move from one branch to another on registration. Currently, a hospital-trained pharmacist can assume sole responsibility of a community pharmacy a day after registration with no previous experience in this area.
2. the provision of joint educational and training sessions for trainees could be organised through a closer working liaison of community and hospital tutors.
3. the trainee can acquire knowledge relevant to a second branch which would broaden their knowledge base for the examination.

In both the 1992 and 1996 surveys, there was strong support from the respondents, for mandatory continuing education during pre-registration training. The survey of tutors had found that since the introduction of the examination and competence-based training, tutors felt that the continuing education demands had increased on the trainee. This is possibly a repercussion of the increasing level of assessment created in the training year. In addition, the majority of the newly-qualified pharmacists from the November 1993 study would have been keen to participate in an independent educational course specifically for pre-registration trainees. Therefore, all trainees could be provided with mandatory continuing education using a uniform educational course. A pre-registration continuing education course could not only provide additional knowledge in areas specific to the examination but also contribute towards a post-graduate qualification attained after registration. The course could incorporate a variety of delivery methods. In this study, the hospital and community respondents preferred a 'residential weekend' and 'distance learning' format respectively. The course could incorporate these two methods or provide two courses using these individual delivery methods.

The exact details of the course would require consultation between employers, tutors, academics and the RPSGB and could be provided by universities. Of most importance, is that the course would provide a format of structured learning which should also motivate trainees to continue lifelong learning.

There was a strong support by the pharmacists from the 1996 survey, who had been on the register for three years, for introduction of mandatory continuing education. At the time, a majority of these pharmacists were dissatisfied with the public perception of their role and status. It is possible that this group envisage mandatory CE as the way forward in developing their career and enhancing their status. In 1997, it was announced by the President of the RPSGB that compulsory continuing professional development will, subject to Council approval, be introduced in the near future. The study supports this future mandate. However, as discussed in Chapter Eight, the monitoring and assessment of mandatory CE will require considerable attention. In addition, the challenge facing the introduction of this mandate is how the objectives will be defined, who will define them, how will the needs of individual pharmacists be ascertained and what will be the overall aims of a mandatory program. There is little point in making a concept compulsory unless its' purpose is clearly defined.

The study also found that a large majority of these young hospital pharmacists were sponsored by their employers to participate in postgraduate courses of clinical orientation and qualification. However, most of the community pharmacists relied on their own motivation and enthusiasm for participation in continuing education, with a high utilisation of CPPE distance learning packages. It is the author's opinion that more community employers should sponsor or contribute towards the participation of their pharmacists in postgraduate courses offering a recognised qualification. This would enhance retention of pharmacists and increase the profile of these employers. In addition, it would allow employers to provide a wider pharmaceutical service, as recommended by recent governmental and RPSGB policies, using properly trained pharmacists.

The multiple community pharmacy groups were the largest employers of pre-registration trainees and subsequently, newly-registered pharmacists. It is likely that this trend will continue to increase as these groups continue to expand. The study shows that these employers are very successful at retaining trainees as pharmacists (Chapter Eight). Approximately one-third of hospital-trained pharmacists had left this sector either immediately after registration or within the first three years of practice, many to move to the community sector. Based on the 1992 and 1994 RPSGB Manpower survey of all UK pharmacists, a further proportion of pharmacists in hospital pharmacy will continue to leave this sector (268,216). The hospital sector trained almost double the proportion of females than males. It is therefore envisaged that the hospital sector continues to lose pharmacists presumably because women may have a break in their career to have a family, and may never return to this sector. In addition, the hospital sector retained lower proportions of hospital-trained Indian pharmacists compared to White pharmacists. This is the largest minority ethnic group in pharmacy and the results suggest that the community sector accounted for a large proportion who left hospital pharmacy. The hospital sector should reconsider their pre-registration recruitment and retention policies based on these findings.

Based on the study, the recommendations for the hospital sector are;

- a) to develop or promote the provision of job sharing schemes, flexible work options and incentives for women pharmacists returning to practice.
- b) to attract more males and ethnic minority students for pre-registration training places.
- c) to investigate methods of retaining pharmacists from ethnic minority groups, as it is clear that many leave this sector after training. A better understanding of their future career progression and remuneration needs in this sector is recommended.
- d) to offer better remuneration for newly-qualified pharmacists. If they do not do this, many will continue to move to the community sector, where they can earn far more than in hospital pharmacy.
- e) continue to offer incentives such as postgraduate clinical qualification courses, but perhaps, offer increased remuneration or quicker career progression on successful completion of the course.

10.1 Some considerations for the future

The four-year course provides an opportunity to re-appraise the nature and provision of undergraduate pharmacy education. The findings from this study do not support the view of the RPSGB Council that for the four-year course, new or enhanced content would be added throughout existing programmes and that most of the new material would be scientific subject matter (58). This study indicates that the scientific knowledge provided in previous courses is sufficient and requires no further enhancement but, the practice-orientated content does. The argument is whether undergraduate pharmacy education should produce scientists who become pharmacists after a period of vocational pre-registration training or whether it should produce graduates with a scientific base, but, with complete awareness of their role and responsibilities as health care professionals. As pharmacists are continually expected to broaden their professional horizons and accept newer challenges, pharmacy undergraduate education must be expected to adapt accordingly to produce graduates capable of accepting these challenges. However, if pharmacy undergraduate education does not adapt or decides its' primary objective is to produce scientists whilst all other medical-based courses adapt to change, pharmacists will lose their credibility or status as health care professionals. In fact, the most recent White Paper 'The New NHS' makes no emphasis on the role of the pharmacist in primary care. There is a need to clarify the objectives of pharmacy undergraduate education and its' role in producing future pharmacists. Currently, it is assumed that all pharmacy degrees are the same irrespective of the institution. However, the results of the pre-registration examination have shown that some schools continue to have higher numbers of failures. The RPSGB must have an awareness if there is a correlation between numbers of failures and schools attracting lower A-level entry grade students. The analysis in Table 1.4 (p.44) shows considerable variation in A-level entry requirements between schools. If there is a correlation then, consideration should be given to imposing a minimum A-level entry requirement for all schools of pharmacy.

This study shows no strong evidence to support pre-registration training as an application of education. Perhaps, a more radical means would be to introduce a USA style of internship where vocational skills are compulsorily developed and assessed during the educational period. This could be organised during vacational periods or in the fourth year allowing students to spend time in external primary care settings.

In this way, the pre-registration training year becomes an extension of the development and assessment of skills already instigated at an earlier level. It also becomes easier to develop a relationship between education and training, but, would require a complete overhaul of the current system in the UK.

Currently, it is acceptable for trainees to train a whole year in one branch of pharmacy and yet acquire a licence to practice in any field of pharmacy immediately after. The demands and skills utilisation are considerably different from one branch to another. The Nuffield Report suggested a period of post-registration supervised training in a new branch of pharmacy. This study supports this recommendation. Over the past few years, there has been so much change to the pre-registration training year and the challenges it offers to trainees. Yet, the entry criteria for tutors has remained exactly the same. Currently, it is assumed that three years of post-registration experience is sufficient to supervise using competence-based training. In addition, there is so much variation between tutors and the support they receive. Some tutors have considerable employer support and have more time for the training role while others have little or no support. For a trainee to receive the best possible competence-based training supervision, it is absolutely crucial that emphasis should now be placed on the uniform training and quality assurance of tutors and trainers. This study also recommends an assessment of the needs of tutors and trainers to be able to provide the best possible training. A future aim of an integrated pharmacy undergraduate education and pre-registration training system should be to produce pharmacists who are recognised as full members of the health care team, respected for their scientific knowledge of drugs, can adapt to new challenges, take on newer and more responsible roles and continue life-long learning.

10.2 OVERALL RECOMMENDATIONS

1. All schools of pharmacy should conduct personal interviews or psychometric tests for students applying to study pharmacy.
2. Each school of pharmacy should increase the emphasis and content of clinical, social and practice-orientated subjects, but, maintain the previous scientific content in a four-year course.
3. Schools of pharmacy should increase the relevance of the scientific content to practice by adopting new learning methods such as SBTE and problem-based learning.
4. The RPSGB are encouraged to advise universities to increase their staffing levels in pharmacy schools, particularly of trained pharmacists and teacher-practitioners.
5. Each school of pharmacy should consider increased use of problem-based and computer-aided learning as directed study and to reinforce knowledge gained from didactic forms of learning.
6. The RPSGB are encouraged to open dialogue between schools of pharmacy and pre-registration tutors to strengthen the relationship between education and training.
7. Pre-registration tutors and hospital trainers should be instructed to assimilate the pre-registration examination syllabus and wherever possible, offer the trainee, the opportunity to apply knowledge from these syllabus areas in practice.
8. All new tutors and hospital trainers must gain a N/SVQ work-based assessor course qualification, particularly in unit D32 and D33, before being allowed to supervise pre-registration training.
9. A regular quality assurance mechanism of tutors should be introduced, which takes into account feedback from pre-registration trainees.
10. The RPSGB is encouraged to pursue a split training scheme for all trainees.
11. The development of a pre-registration continuing education course for trainees is recommended for implementation. Current postgraduate course providers should consider the viability of providing this course.
12. Future continuing education or training courses specifically for pre-registration tutors should be delivered in a video format, as this is their preferred method.
13. More community pharmacy employers are encouraged to sponsor their pharmacists to undertake a recognised postgraduate clinical qualification.
14. The hospital sector should review or consider their recruitment and retention policies particularly towards female and ethnic minority pharmacists.

10.3 SUGGESTIONS FOR FURTHER WORK

1. The four-year pharmacy syllabus, learning methods, directed study and staffing should be evaluated in detail for each school of pharmacy. The evaluation can then provide an overall picture of the actual changes that have taken place for the four-year course and how these meet the recommendations of this study.
2. A large scale survey of pharmacists who have undertaken the pre-registration examination since its' inception should be carried out. The survey should ascertain opinions on the format and structure of the examination and the extent to which knowledge from the undergraduate course, pre-registration training and reference books is utilised in the examination.
3. A follow-up survey of pre-registration tutors on competency training should be carried out. This form of training is now in its fifth year and the survey should ascertain current opinion on its suitability and effectiveness, level of training and educational needs of tutors and trainers to carry out competency assessment.
4. A study of a cross-section of pharmacists who have been on the RPSGB register less than 10 years should be carried out to ascertain work patterns. The study should include a postal survey and focus group discussions. The study should try and find out the extent and reasons for transition of hospital-trained pharmacists into other sectors and investigate female and ethnic minority work patterns in pharmacy in the first ten years of practice.

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APPENDIX 1

PHARMACY UNDERGRADUATE EDUCATION AND PRE-REGISTRATION TRAINING

**Copy of the questionnaire used for the 1992 survey of newly graduated
pharmacy pre-registration trainees**

SURVEY OF 1992-93 PRE-REGISTRATION PHARMACY GRADUATES ON
PHARMACY EDUCATION.

All questions apply to the pre-registration pharmacy student and your opinions on aspects of education in the undergraduate course and in your pre-registration year.

This survey DOES NOT in any way seek any information about your employers or details of employment.

ABOUT THE QUESTIONNAIRE:

1. For most questions please CIRCLE the number corresponding to the appropriate response.
2. For some questions you are asked to write any comments or place number in the space provided.
3. I believe you will find the questionnaire both interesting and easy to complete and should not take too much time.

Finally, all information will be treated in strictest confidence.

THANK YOU FOR TAKING THE TIME TO COMPLETE THIS QUESTIONNAIRE

1. Are you working your pre-registration year in

- Community 1
- Hospital 2
- Community and Hospital 3
- Community and Industry 4
- Hospital and Industry 5
- If Other,
Please specify.....
..... 6

2. Which school of Pharmacy did you attend ?

.....

3. When you decided to choose to study Pharmacy which branch of the profession were you **most** interested in working in.

Please **CIRCLE** the number opposite the appropriate response.

- COMMUNITY 1
- HOSPITAL 2
- INDUSTRY 3
- RESEARCH 4
- TEACHING 5
- IF OTHER, PLEASE SPECIFY
..... 6

4. Please state how important the following factors were in you choosing to study Pharmacy. Please **CIRCLE** the number corresponding to the appropriate response.

Not Important	Of little Importance	Importance unknown	Important	Very Important
1	2	3	4	5

- | | | | | | |
|---|---|---|---|---|---|
| a) Liked or good at Chemistry in school | 1 | 2 | 3 | 4 | 5 |
| b) Influenced by Careers day, careers officer or teacher | 1 | 2 | 3 | 4 | 5 |
| c) Influenced by family or friends | 1 | 2 | 3 | 4 | 5 |
| d) Desire to become an adviser to the public about health matters | 1 | 2 | 3 | 4 | 5 |
| e) Desire to provide health care by becoming an expert on drugs and their use | 1 | 2 | 3 | 4 | 5 |
| f) Desire to be a professional and own a business. | 1 | 2 | 3 | 4 | 5 |
| g) Unable to get into another medical based profession | 1 | 2 | 3 | 4 | 5 |

Any other reason

.....

YOUR UNDERGRADUATE COURSE

5. I am interested in determining the **USEFULNESS** of topics taught in the undergraduate course.

Please state how **USEFUL** you think the topics listed will be with respect to **providing you with the knowledge necessary to work effectively during your pre-registration year.**

If the topic is unfamiliar please leave it unanswered or replace with any topic taught in your school that I have not included.

PLEASE CIRCLE THE NUMBER CORRESPONDING TO THE APPROPRIATE RESPONSE

OF NO USE	OF LITTLE USE	NOT SURE	OF SOME USE	OF GREAT USE
1	2	3	4	5

A. PHARMACEUTICAL CHEMISTRY

a) organic chemistry	1	2	3	4	5
b) stereochemistry	1	2	3	4	5
c) inorganic chemistry	1	2	3	4	5
d) analytical chemistry	1	2	3	4	5
e) biochemistry	1	2	3	4	5

B. PHARMACEUTICS

a) formulation	1	2	3	4	5
b) pharmacokinetics	1	2	3	4	5
c) quality assurance	1	2	3	4	5
d) drug delivery systems	1	2	3	4	5
e) bioavailability	1	2	3	4	5

C. MICROBIOLOGY

a) aseptics	1	2	3	4	5
b) chemotherapy	1	2	3	4	5
c) immunology	1	2	3	4	5
d) pharmaceutical microbiology	1	2	3	4	5

D. PHARMACOLOGY

a) physiology	1	2	3	4	5
b) pharmacology	1	2	3	4	5
c) clinical pharmacy	1	2	3	4	5

E. PHARMACOGNOSY

	1	2	3	4	5
--	---	---	---	---	---

F. PHARMACY PRACTICE

a) law and ethics	1	2	3	4	5
b) dispensing practicals	1	2	3	4	5
c) responding to symptoms	1	2	3	4	5
d) communication studies	1	2	3	4	5
e) social\ behavioural studies	1	2	3	4	5

G. OTHER AREAS

a) statistics	1	2	3	4	5
b) computing	1	2	3	4	5
c) options and electives	1	2	3	4	5
d) project	1	2	3	4	5
e) visits to hospitals	1	2	3	4	5
f) visits to industry	1	2	3	4	5

6. I am interested in determining the **EXTENT OF TEACHING** of topics taught in the undergraduate course.

Please state whether the **total number of hours taught for each of these subjects should be more or less than at present.**

If the topic is unfamiliar please leave it unanswered or replace with any topic taught in your school that I have not included.

PLEASE CIRCLE THE NUMBER CORRESPONDING TO THE APPROPRIATE RESPONSE

A LOT LESS	A BIT LESS	JUST RIGHT	A BIT MORE	A LOT MORE
1	2	3	4	5

A. PHARMACEUTICAL CHEMISTRY

a) organic chemistry	1	2	3	4	5
b) stereochemistry	1	2	3	4	5
c) inorganic chemistry	1	2	3	4	5
d) analytical chemistry	1	2	3	4	5
e) biochemistry	1	2	3	4	5

B. PHARMACEUTICS

a) formulation	1	2	3	4	5
b) pharmacokinetics	1	2	3	4	5
c) quality assurance	1	2	3	4	5
d) drug delivery systems	1	2	3	4	5
e) bioavailability	1	2	3	4	5

C. MICROBIOLOGY

a) aseptics	1	2	3	4	5
b) chemotherapy	1	2	3	4	5
c) immunology	1	2	3	4	5
d) pharmaceutical microbiology	1	2	3	4	5

D. PHARMACOLOGY

a) physiology	1	2	3	4	5
b) pharmacology	1	2	3	4	5
c) clinical pharmacy	1	2	3	4	5

E. PHARMACOGNOSY

	1	2	3	4	5
--	---	---	---	---	---

F. PHARMACY PRACTICE

a) law and ethics	1	2	3	4	5
b) dispensing practicals	1	2	3	4	5
c) responding to symptoms	1	2	3	4	5
d) communication studies	1	2	3	4	5
e) social\ behavioural studies	1	2	3	4	5

G. OTHER AREAS

a) statistics	1	2	3	4	5
b) computing	1	2	3	4	5
c) options and electives	1	2	3	4	5
d) project	1	2	3	4	5
e) visits to hospitals	1	2	3	4	5
f) visits to industry	1	2	3	4	5

7. The following subjects are taught in various schools across the world and maybe to some extent in the U.K

Please state how useful you feel their INCLUSION in the undergraduate course would be.

Please CIRCLE the number corresponding to the appropriate response.

OF NO USE 1	OF LITTLE USE 2	NOT SURE 3	OF SOME USE 4	OF GREAT USE 5
----------------	--------------------	---------------	------------------	-------------------

- | | | | | | |
|--|---|---|---|---|---|
| a) Drug abuse and addiction, social and clinical aspects | 1 | 2 | 3 | 4 | 5 |
| b) Environmental issues concerning health | 1 | 2 | 3 | 4 | 5 |
| c) Study of food and dietary habits | 1 | 2 | 3 | 4 | 5 |
| d) Study of ethnicity and ethnic diseases | 1 | 2 | 3 | 4 | 5 |
| e) Clinical pharmacy by integration in a hospital environment | 1 | 2 | 3 | 4 | 5 |
| f) Study of providing home health care for homebound patients e.g. parenteral (TPN) therapy, monitoring compliance, mobility aids and advice | 1 | 2 | 3 | 4 | 5 |
| g) Management and organisation of business and employees | 1 | 2 | 3 | 4 | 5 |
| h) Study the understanding of social factors such as poverty and their implications on illness | 1 | 2 | 3 | 4 | 5 |
| i) Information technology and computer literacy relevant to computer use in pharmacy | 1 | 2 | 3 | 4 | 5 |

8. Are there any other topics you would like to see included in the undergraduate course ?
Please give details.

.....

9. Are there any changes that you would like to be made to the current undergraduate course?

YES	1
NOT SURE	2
NO	3

Please give details

.....
.....
.....
.....

10. Do you feel that the current undergraduate course should be extended by a year, that is, one more year in the school of pharmacy?

YES	1
NOT SURE	2
NO	3

IF YOUR RESPONSE IS YES, HOW MIGHT THIS YEAR BE BEST USED:-

.....
.....
.....
.....
.....

IF YOUR RESPONSE IS NO, PLEASE STATE YOUR REASONS:-

.....
.....
.....
.....

11. The following is a list of **learning methods** used in various undergraduate courses.

Which of these methods were used in your course and if so, how useful did you find them in **improving your ability to learn and understand syllabus topics**. Please **CIRCLE** the number corresponding to the appropriate response.

	USED? If yes, then how USEFUL?						
	No	Yes	no use	little use	not sure	some use	very useful
	1	2	1	2	3	4	5
a) Computer-aided learning	1	2	1	2	3	4	5
b) STUDENT PARTICIPATION							
a) posters	1	2	1	2	3	4	5
b) presentations	1	2	1	2	3	4	5
c) projects	1	2	1	2	3	4	5
c) Problem solving e.g. case studies in clinical pharmacy	1	2	1	2	3	4	5
d) Lectures	1	2	1	2	3	4	5
e) Tutorials or seminars	1	2	1	2	3	4	5
f) Practicals	1	2	1	2	3	4	5

12. To what extent do you **agree** or **disagree** with these statements that refer to the **undergraduate course and Pharmaceutical education.**

Please **CIRCLE** the number corresponding to the appropriate response.

a) **The undergraduate syllabus in general bears little relevance to the knowledge I require in practice.**

Strongly disagree	Disagree	Indifferent	Agree	Strongly agree
1	2	3	4	5

b) **The undergraduate course has enabled me to develop my communicative skills.**

Strongly disagree	Disagree	Indifferent	Agree	Strongly agree
1	2	3	4	5

c) **The undergraduate course does not teach about social issues relevant to pharmacy.**

Strongly disagree	Disagree	Indifferent	Agree	Strongly agree
1	2	3	4	5

d) **The undergraduate course has developed my awareness of the pharmacist's role in the three main branches of the profession.**

Strongly disagree	Disagree	Indifferent	Agree	Strongly agree
1	2	3	4	5

e) **At the completion of the undergraduate course I do not feel confident enough to recommend appropriate use of medication to achieve optimal therapeutic outcomes.**

Strongly disagree	Disagree	Indifferent	Agree	Strongly agree
1	2	3	4	5

f) **I am confident I have working knowledge of drug formulation with respect to methods of delivery to the body.**

Strongly disagree	Disagree	Indifferent	Agree	Strongly agree
1	2	3	4	5

g) **More emphasis should be placed on teaching clinical and practice subjects.**

Strongly disagree	Disagree	Indifferent	Agree	Strongly agree
1	2	3	4	5

THE UNDERGRADUATE COURSE AND PRE-REGISTRATION YEAR

13. The Royal Pharmaceutical Society of Great Britain has recently published a syllabus of topics for the pre-registration exam. You will need to have sufficient knowledge of these topics to pass the examinations held towards the end of your pre-registration year (You have or will be receiving a copy of this syllabus).

Which of these subjects below, listed under the "must know" category in the syllabus, were taught in your degree course?

Please CIRCLE the number corresponding to the appropriate response.

1 = NOT TAUGHT

2 = TAUGHT BUT DID NOT UNDERSTAND

3 = NOT SURE IF I WAS TAUGHT

4 = TAUGHT BUT NOT SURE IF I'LL BE ABLE TO APPLY IN PRACTICE

5 = TAUGHT AND I'M SURE I'LL BE ABLE TO APPLY IN PRACTICE

a) Sale and supply of medicines and poisons	1	2	3	4	5
b) Code of Ethics	1	2	3	4	5
c) Health and safety and safe systems at work	1	2	3	4	5
d) Consumer Protection Act	1	2	3	4	5
e) Data Protection Act	1	2	3	4	5
f) The National Health Service in Great Britain, its role and structure	1	2	3	4	5
g) The basis of responding to symptoms including the major categories of symptoms and the appropriate responses by a pharmacist	1	2	3	4	5
h) Reading and interpreting prescriptions	1	2	3	4	5
i) Drug action, absorption, distribution, metabolism and elimination	1	2	3	4	5
j) Adverse drug reactions, side effects, interactions and contra-indications	1	2	3	4	5
k) The use of reference books and other information sources	1	2	3	4	5

QUESTION 13 CONTINUED

1 = NOT TAUGHT

2 = TAUGHT BUT DID NOT UNDERSTAND

3 = NOT SURE IF I WAS TAUGHT

4 = TAUGHT BUT NOT SURE IF I'LL BE ABLE TO APPLY IN PRACTICE

5 = TAUGHT AND I'M SURE I'LL BE ABLE TO APPLY IN PRACTICE

l) Labelling	1	2	3	4	5
m) Advice to patients and members of the public on medication and use		2	3	4	5
n) Maintenance of a working relationship with other health Professionals	1	2	3	4	5
o) Stability and storage of medicinal products	1	2	3	4	5
p) Good dispensing practice	1	2	3	4	5

14. Which of the following factors were relevant to you when you were choosing your pre-registration training. Please CIRCLE the number 1 next to the statement in the LEFT-HAND column. (choose as many that apply)

Secondly, In the RIGHT-HAND column please rank the factors you have chosen in order of importance with 1 being the most important down to the least important.

	RANK
Offered best opportunity to apply knowledge into practice	1
Training offered was very good	1
Good career prospects with same employer afterwards	1
Branch of Pharmacy I want to work in after training	1
Familiar with the employer due to previous work here	1
Recruitment opportunity by employer at school of Pharmacy	1
To be near family or friends or partner	1
Only prospect available	1
Unable to get into first choice of training	1
Qualify as a Pharmacist before doing something else	1

15. To what extent do you agree or disagree with the following statements that refer to the **pre-registration year and exam**. Please **CIRCLE** the number corresponding to the appropriate response.

a) The pre-registration year will not give me the opportunity to apply the knowledge from the undergraduate course into practice.

Strongly disagree	Disagree	Indifferent	Agree	Strongly agree
1	2	3	4	5

b) The pre-registration year should be split to allow me to gain an insight and experience in two branches of the profession.

Strongly disagree	Disagree	Indifferent	Agree	Strongly agree
1	2	3	4	5

c) At the completion of my pre-registration year I feel confident that I will be able to work as a Pharmacist in any branch of the profession.

Strongly disagree	Disagree	Indifferent	Agree	Strongly agree
1	2	3	4	5

d) At the completion of my pre-registration training I should be capable of offering advice on medications and their use to patients and members of the public.

Strongly disagree	Disagree	Indifferent	Agree	Strongly agree
1	2	3	4	5

e) The pre-registration year will not equip me sufficiently to organise and manage employees.

Strongly disagree	Disagree	Indifferent	Agree	Strongly agree
1	2	3	4	5

f) It should become MANDATORY for pre-registration students to attend a minimum number of Pharmacy continuous education study days or evening seminars.

Strongly disagree	Disagree	Indifferent	Agree	Strongly agree
1	2	3	4	5

16. How would you describe your ethnic origin ?

WHITE	1	PAKISTANI	6
BLACK-CARIBBEAN	2	BANGLADESHI	7
BLACK-AFRICAN	3	CHINESE	8
BLACK-OTHER	4	ANY OTHER ETHNIC GROUP	
INDIAN	5	Please specify.....	9

17. Are you

Male	1
Female	2

If there are any other comments that you'd like to make about the undergraduate course or pre-registration year please write them in the space here.

.....

.....

.....

.....

.....

.....

.....

Thank you very much for your co-operation in this survey and I wish you the best of luck for the future.

Yours Sincerely,

Mandeep Mudhar

APPENDIX 2

PHARMACY PRE-REGISTRATION TRAINING

Copy of the questionnaire used for the 1993 survey of pre-registration trainees during the training year

This brief questionnaire is to assess how your pre-registration training is progressing. The information is confidential and will only be used for a PhD research in pharmacy education and has no connection with the London Pharmacy Consortium.

Please mark anywhere on the horizontal line where you feel your response is most appropriate to each statement.

Example: I wish I was a student again so that I wouldn't have to wake up for work at 9 A.M everyday

Definitely not

_____ X _____

Definitely yes

1. Is your pre-registration training in:-(please circle)

Community

Hospital

Community and Hospital

Community and Industry

Hospital and industry

Other

1

2

3

4

5

6

2. To what extent were the questions in the pre-test more demanding than anticipated?

Not demanding at all

Very demanding

3. Has the pre-test increased your awareness of the type of questions that might be set in the pre-registration exam?

Not at all

Completely

4. To what extent do you feel the pre-test utilised any knowledge attained at undergraduate level while studying pharmacy?

Not at all

Completely

5. To what extent does your pre-registration tutor give you guidance on topics that are classed as "must know" in your manual and may be asked in the exam?

Not at all

Completely

6. To what extent do you feel your pre-registration training so far :-

a) has enabled you to identify and provide relevant reference material to help you to pass the exam?

Not at all

Completely

b) has enabled you to exercise your own knowledge and experience?

Not at all

Completely

c) has been a "hands on" practice of what you learned at your school of pharmacy.

Not at all

Completely

d) is what you expected of pharmacy

Not at all

Completely

e) is teaching you the day to day skills you will require as a pharmacist?

Not at all

Completely

7. After your pre-registration training, do you hope to stay in the same branch of the profession that you are currently in?

Definitely not

Definitely yes

8. At this moment in life how do you feel about having chosen pharmacy as a career?

Very disillusioned

Very happy

Thank you very much for your co-operation. Good luck with the rest of your pre-reg year.

APPENDIX 3

PHARMACY PRE-REGISTRATION TRAINING

**Copy of the questionnaire used for the survey of newly registered
pharmacists who completed pre-registration training in 1993**

SURVEY OF 1993 NEWLY QUALIFIED PHARMACISTS CONCERNING PRE-REGISTRATION TRAINING AND EDUCATION

Most of the the questions in this survey are concerned with education in the pharmacy pre-registration year. They are to assess your opinions about whether or not you think more training is needed during the pre-registration year.

No information is sought about your employers or terms of employment

About the Questionnaire

- 1) For most of the questions, please circle the box corresponding to your response.
- 2) For all the other questions, please respond as asked to do.
- 3) Please make any comments about any topics you feel haven't been covered in enough detail or about any of the questions asked, in the space provided at the end of the questionnaire.
- 4) I hope that you will find this questionnaire both interesting and easy to complete without it taking too much of your time.

All information received will be treated in the strictest confidence.

Thank you for taking the time to complete this questionnaire.

(1) In which area of pharmacy did you undertake your pre-registration training?

Community - single independent []

Community - chain 2-10 shops []

Community - chain 11-50 shops []

Community - chain > 50 shops []

Hospital []

Industry and Hospital []

Industry and Community []

Community and Hospital []

Others, please specify _____

(2) In which area of pharmacy are you currently working?

Community - single independent []

Community - chain 2-10 shops []

Community - chain 11-50 shops []

Community - chain > 50 shops []

Hospital []

Industry []

Others, please specify _____

(3) On a scale of 1 to 5 to what extent do you think that the knowledge you gained at University prepared you for your pre-registration year where 1 indicates completely and 5 not at all?

Please circle the box which corresponds to your response.

[1]

[2]

[3]

[4]

[5]

(4) Please state your level of agreement with the following statements that may be used to describe the purpose of the pre-registration year?

State your level of agreement by circling the box that corresponding to the appropriate response using the key below.

1 = Strongly Agree	2 = Agree	3 = Neither agree nor disagree
4 = Disagree	5 = Strongly Disagree	

The pre-registration year:

(a) Is necessary for the graduate to gain competence in approved areas of practice.

[1] [2] [3] [4] [5]

(b) Is necessary for the graduate to apply the knowledge and skills gained at University.

[1] [2] [3] [4] [5]

(c) Is necessary for the graduate to gain practical experience in the workplace.

[1] [2] [3] [4] [5]

(d) Is necessary to develop the professionalism of the graduate prior to practice.

[1] [2] [3] [4] [5]

(e) Trains the graduate to pass the registration examination.

[1] [2] [3] [4] [5]

(5) How satisfied were you with the standard of pre-registration training you received?
Please circle the appropriate response

Very Satisfied
[1]

Satisfied
[2]

Neutral
[3]

Dissatisfied
[4]

Very Dissatisfied
[5]

(6) The following subject areas are categorised by the RPSGB as 'must know' topics in order to successfully complete the pre-registration training.

How useful do you consider your pre-registration training in these subjects to have been for successful completion of your pre-registration year. Please circle the box corresponding to the most appropriate response using the key below.

If you did not receive training in any of these areas please leave the appropriate box blank.

1 = Very Useful	2= Useful	3 = Neutral
4 = Not much use	5 = Of no use at all	

a) Pharmacy Law e.g. sale and supply of medicines and poisons, consumer and data protection act, Health and Safety act e.t.c.

[1] [2] [3] [4] [5]

b) Code of Ethics

[1] [2] [3] [4] [5]

c) The National Health Service in Great Britain, its role and structure

[1] [2] [3] [4] [5]

d) The basis of responding to symptoms including the major categories of symptoms.

[1] [2] [3] [4] [5]

e) Reading and interpreting prescriptions

[1] [2] [3] [4] [5]

f) Clinical pharmacy.

[1] [2] [3] [4] [5]

g) The use of reference books and other information sources

[1] [2] [3] [4] [5]

h) Labelling

[1] [2] [3] [4] [5]

i) Communication and interpersonal skills with patients and members of the public on medication and use

[1] [2] [3] [4] [5]

j) Maintenance of a working relationship with other health professionals

[1] [2] [3] [4] [5]

k) Role of the RPSGB

[1] [2] [3] [4] [5]

l) Preparation for the registration examination.

[1] [2] [3] [4] [5]

(7) Please state whether you would have liked more or less training in these subjects during your pre-registration year to prepare you to practice pharmacy after your pre-registration year.

Please circle the box corresponding to the most appropriate response using the key below.

1 = Much more	2= More	3 = Neutral
4 = Less	5 = A lot less	

a) Pharmacy Law e.g. sale and supply of medicines and poisons, consumer and data protection act, Health and Safety act e.t.c.

[1] [2] [3] [4] [5]

b) Code of Ethics

[1] [2] [3] [4] [5]

c) The National Health Service in Great Britain, its role and structure

[1] [2] [3] [4] [5]

d) The basis of responding to symptoms including the major categories of symptoms.

[1] [2] [3] [4] [5]

e) Reading and interpreting prescriptions

[1] [2] [3] [4] [5]

f) Clinical pharmacy.

[1] [2] [3] [4] [5]

g) The use of reference books and other information sources

[1] [2] [3] [4] [5]

h) Labelling

[1] [2] [3] [4] [5]

i) Communication and interpersonal skills with patients and members of the public on medication and use

[1] [2] [3] [4] [5]

j) Maintenance of a working relationship with other health professionals

[1] [2] [3] [4] [5]

k) Role of the RPSGB

[1] [2] [3] [4] [5]

(8) If you undertook any of the following forms of training **outside your place of pre-registration work, please state how useful you found them** by circling the box that corresponds to the most appropriate response using the key below.

Please leave blank the ones you did not.

1 = Very Useful	2= Useful	3 = Neutral			
	4 = Not much use	5 = Of no use at all			

- | | | | | | |
|---|-----|-----|-----|-----|-----|
| (a) Self study books | [1] | [2] | [3] | [4] | [5] |
| (b) Self study modules and tutorials | [1] | [2] | [3] | [4] | [5] |
| (c) Company training courses | [1] | [2] | [3] | [4] | [5] |
| (d) RPSGB training days | [1] | [2] | [3] | [4] | [5] |
| (e) Regional health authority training days | [1] | [2] | [3] | [4] | [5] |
| (f) Training periods arranged in other establishments | [1] | [2] | [3] | [4] | [5] |

please specify where _____

(9) How keen would you have been to attend an independent training course designed specifically for pre-registration graduates e.g. one organised by a school of pharmacy? Please circle the appropriate response.

Very keen	Keen	Neutral	Not very keen	Unwilling to attend
[1]	[2]	[3]	[4]	[5]

(10) The following are various methods which could be used to deliver a pre-registration training course.

Please rank the following in order of how a training course could have been best delivered to you where 1 would be your first choice and 5 the last choice.

- | | |
|---------------------------------|-------|
| Distance learning only | _____ |
| Distance learning and tutorials | _____ |
| Half day course | _____ |
| Evening course | _____ |
| Residential weekend | _____ |

- (11) If a pre-registration training course had counted as one of several points towards a post-graduate qualification, **how influenced would you have been to attend such a course?**

Please rank your influence on a scale of 1 to 5 where 1 indicates completely influenced and 5 not influence at all.

[1] [2] [3] [4] [5]

- (12) Please state how much you would have been prepared to pay for a one day pre-registration course on any aspect of your training that you felt needed extra learning.

- (13) **How important do you feel interaction** with the pre registration tutor is in the learning process?

Very Important [1] Important [2] Neutral [3]

Not important [4] Not important at all [5]

- (14) **Did you feel that your tutor had sufficient training to help you gain the most out of your pre-registration year ?**

Please indicate your response on a scale of 1 to 5 where 1 indicates the tutor being sufficiently trained and 5 not trained at all.

[1] [2] [3] [4] [5]

(15) Please state your level of agreement with these statements concerning the pre-registration examination by circling the most appropriate response using the key below.

1 = Strongly Agree	2 = Agree	3 = Neither agree nor disagree
	4 = Disagree	5 = Strongly Disagree

The pre-registration examination:

(a) Is a test of academic ability.

[1] [2] [3] [4] [5]

(b) Is a means of controlling the standard of pharmacists entering the profession.

[1] [2] [3] [4] [5]

(c) Is a test of skills and knowledge gained during the pre registration year.

[1] [2] [3] [4] [5]

(d) Tests the same skills and knowledge as the undergraduate course.

[1] [2] [3] [4] [5]

(e) Is just part of the pre-registration year.

[1] [2] [3] [4] [5]

(f) Is not of much use.

[1] [2] [3] [4] [5]

(16) Did you pass the exam first time ?

Yes [] No []

(17) How confident did you feel about practising as a qualified pharmacist after you had completed your pre-registration year ?

Very Confident [1] Confident [2] Not sure [3]

Not Confident [4] Not confident at all [5]

(18) How strongly would you support the introduction of a four year degree course?

Please indicate response on a scale of 1 to 5 where 1 represents very strong support and 5 no support at all for a four year course.

[1] [2] [3] [4] [5]

(19) How strongly do you agree that a four year course which includes a minimum compulsory vocational period in any branch of pharmacy would help graduates to gain more from their pre-registration year ?

Please indicate response on a scale of 1 to 5 where 1 represents very strong agreement and 5 no agreement at all.

[1] [2] [3] [4] [5]

Thank you for completing this questionnaire. All responses will be treated in the strictest confidence.

Yours Sincerely

APPENDIX 4

PHARMACY PRE-REGISTRATION TRAINING

**Copy of the questionnaire used for the survey of 1993-94 pre-
registration tutors**

SURVEY OF PRE-REGISTRATION PHARMACY TUTORS ON ASPECTS OF PRE-REGISTRATION TRAINING

All questions apply to pre-registration pharmacy tutors and their opinions on pre-registration training.

This survey does not seek in any way information about your employer or details of employment.

All information will be treated with the strictest confidence

ABOUT THE QUESTIONNAIRE

1. For most questions please **CIRCLE** the number corresponding to the most appropriate response.
2. For some questions you are requested to place a number in the space provided to indicate priority or to tick those factors which have some relevance to your training. For others, comments are requested; please feel free to respond as you wish.
3. In order to satisfactorily assess the role of pre-registration training, it has been necessary to cover a broad range of topics and to ask specific questions about the different branches of pharmacy at the end of the questionnaire.
I apologise for the length of the questionnaire.
4. The results will be used in my PhD thesis on Pharmacy education. This will analyse the pre-registration year which, I believe, is the most important training period of all.

Once again, all information will be treated in strictest confidence

**THANK YOU FOR TAKING THE TIME TO COMPLETE THE
QUESTIONNAIRE**

1. In which branch of the profession do you act as a pre-registration tutor?

Community single independent	1
Community pharmacy chain of 2-10 pharmacies	2
Community pharmacy chain of 11-50 pharmacies	3
Community pharmacy chain of over 50 pharmacies	4
Hospital	5
Industry	6
Other, please state	

2. For how long have you been a pre-registration tutor?

My first year	1
1 year	2
Between 2 and 5 years	3
More than 5 years	4

3. How many pre-registration students are registered to you as a tutor this year?

One student	1
Two students	2
Between 3 and 5 students	3
Between 5 and 10 students	4
Over 10 students	5

4. Please state your degree of satisfaction with **the level of information that you received from the RPSGB this year (1993-4)** with regard to the factors listed below.

Please state your degree of satisfaction by **circling the number corresponding to the most appropriate response using the key below**. If you would like to comment on any question please feel free to do so.

Very dissatisfied	Dissatisfied	Neutral	Satisfied	Very satisfied
1	2	3	4	5

a) The syllabus material for the pre-registration examination.

1 2 3 4 5

b) Changes made that are necessary in the pre-registration training as a result of the introduction of the examination.

1 2 3 4 5

c) Emphasis on training in specific areas that are definitely covered in the examination.

1 2 3 4 5

d) The consequences of the student failing the examination for both you and the student.

1 2 3 4 5

e) The reasons for the introduction of the new competency-based **training**.

1 2 3 4 5

f) The structure of the new competency-based **assessment**.

1 2 3 4 5

g) Specific changes in the training and testing necessary as a result of the new competency-based testing.

1 2 3 4 5

h) The minimum amount of continuing education pre-registration tutors should undertake.

1 2 3 4 5

i) The subject areas of continuing education which pre-registration tutors should undertake.

1 2 3 4 5

j) The support and advice available to deal with any problems associated with the student that may affect the quality of training received during the year.

1 2 3 4 5

If you were not a pre-registration tutor before the 1992-3 training year, please proceed to Question 6.

5. Please state your level of agreement with the following statements that are associated with how **certain aspects of the pre-registration training may have changed since the pre-registration examination was officially introduced in the 1992-3 year as compared to before this year.**

Please use the key below to circle the number corresponding to the most appropriate response.

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
1	2	3	4	5

- a) There has been a significant improvement in the training manual making it much more clearly defined in terms of training requirements.

1 2 3 4 5

- b) In order to gain maximum benefit from your pre-registration training, the continuing education demands on the student have significantly increased.

1 2 3 4 5

- c) The continuing education demands on the tutor are significantly higher now.

1 2 3 4 5

- d) The students' expectations of the quality of training provided is much higher now.

1 2 3 4 5

- e) Being a pre-registration tutor is more intellectually demanding than before.

1 2 3 4 5

- f) The RPSGB provide adequate advice and support for the role of the tutor.

1 2 3 4 5

- g) The increase in your responsibilities as a pre-registration tutor have compromised the quality of your training.

1 2 3 4 5

- h) The role of a pre-registration tutor requires much more time now to carry out the duties effectively than it did previously

1 2 3 4 5

6. I am interested in determining your opinions on the new competency-based training.

Please state your level of agreement with the following statements by circling the number corresponding to the most appropriate response using the key below.

Strongly disagree 1	Disagree 2	Neutral 3	Agree 4	Strongly agree 5
-------------------------------	----------------------	---------------------	-------------------	----------------------------

a) It is possible to make an objective assessment of competency in a day-to-day work environment.

1 2 3 4 5

b) The assessment of competency will allow you to make an accurate prediction of the student's ability as a potential pharmacist.

1 2 3 4 5

c) The competency-based training is the most appropriate method of assessing the skills which the student gains during your training.

1 2 3 4 5

d) The competency-based training in your branch of pharmacy covers all of the skills necessary for the student to master before becoming a pharmacist.

1 2 3 4 5

If your response to the above statement is disagree or strongly disagree please state which areas of testing you feel have been omitted.

e) A strong correlation between the student's examination performance and their performance in the competency-based assessments is expected.

1 2 3 4 5

f) The criteria given in the training manual on testing competency are easy to understand and then accomplish.

1 2 3 4 5

g) The competency-based training is difficult to accomplish effectively due to time constraints in day-to-day work.

1 2 3 4 5

If you were not a pre-registration tutor during the 1992-3 year please proceed to Question 8.

7. I am interested in determining your opinions about the first pre-registration examination held at the end of the 1992-3 year.

If you were a tutor during the 1992-3 training year please state your level of agreement with the following statements by circling the number corresponding to the most appropriate response using the key below.

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
1	2	3	4	5

a) The examination tested very few of the skills your student gained in the pre-registration training.

1 2 3 4 5

b) Performance in the pre-registration examination indicates the same academic abilities already assessed by the undergraduate degree.

1 2 3 4 5

c) The pre-registration examination is appropriate for assessing whether a student should qualify to become a pharmacist.

1 2 3 4 5

d) The examination favoured those students who did all or part of their training in community pharmacy.

1 2 3 4 5

e) The use of multiple-choice based questions is inadequate to test many areas of the pre-registration training.

1 2 3 4 5

f) The 13 - weekly assessments were a good indicator of how your student would perform in the examination.

1 2 3 4 5

g) The pre-registration examination has been introduced as a device for controlling the numbers of qualified pharmacists in the profession.

1 2 3 4 5

Please feel free to comment on any aspects of the pre-registration examination on the last page of this questionnaire.

8. I am interested in determining your opinions on continuing education and its influence on providing the best pre-registration training possible.

Please write any comments in the space provided.

a) How much continuing education do you participate in?

(this includes reading current pharmacy journals, distance-based learning, evening LPC meetings, courses)

None	0
Between 0 and 1 hours per week	1
Between 1 and 3 hours per week	2
Between 3 and 5 hours per week	3
Between 5 and 10 hours a week	4
Over 10 hours per week	5

b) Do you feel this is sufficient for you?

YES	1
NOT SURE	2
NO	3

c) Please tick which of the following factors, if any, may contribute towards not spending more time on continuing education.

Time constraints at work.	_____
Working long hours.	_____
Time away from work is spent relaxing or with family/friends/partner.	_____
No financial incentive.	_____
Parent company does not sponsor or pay for any such interests.	_____
Current continuing education facilities are insufficient or not good enough.	_____

d) If you feel that there is a need for better continuing education in order to provide the best pre-registration training possible, what areas of pharmacy would you like to see covered?

Please state as many as you feel necessary.

e) The following are various forms of delivering continuing education.

What order of priority would you give to these forms of continuing education with regards to giving you adequate support and training in order to provide the best pre-registration training possible? (Please indicate priority by ranking them from 1 to 6 with 1 being the best possible form of delivery)

Distant-learning packs with occasional weekend meetings based at a school of pharmacy _____

Distant-learning packs with no weekend meetings _____

Evening / weekend meetings _____

Video packages based upon the Open University system _____

Computer packages (sent on compatible discs) _____

A phone-line providing a support and advisory service _____

9. Please tick which of the following **personal qualities useful in pharmacy** you feel your pre-registration student(s) **lack** at the beginning of their pre-registration training either regularly from past years (for tutors with previous experience) or just this year (for first time tutors).

Ability to present a professional appearance and demeanour _____

Ability to put theoretical based learning into practice _____

Ability to accept day-to-day responsibilities _____

Ability to carry out tasks with enthusiasm _____

Ability to display a willingness to learn. _____

Present acceptable attitudes with regards to:

other work colleagues _____

patients or public _____

day-to-day work _____

10. I am interested in determining **how well prepared by their undergraduate course are your pre-registration students at the beginning of their pre-registration training with regard to the aspects listed below?**
 (Please use the 1 to 5 scale listed below).

Not prepared at all	1
Prepared to a little extent	2
Prepared to some extent but without the ability to put the knowledge into practice	3
Prepared to some extent and with the ability to put some knowledge into practice	4
Very well prepared	5

i) Knowledge of Law and Ethics

1	2	3	4	5
---	---	---	---	---

ii) Dispensing procedures

1	2	3	4	5
---	---	---	---	---

iii) Prescription handling and reading

1	2	3	4	5
---	---	---	---	---

iv) Communication and advisory skills with other health professionals.

1	2	3	4	5
---	---	---	---	---

v) Communication and advisory skills with patients.

1	2	3	4	5
---	---	---	---	---

vi) Drug action and the patient

1	2	3	4	5
---	---	---	---	---

vii) Methods of drug delivery from different formulations.

1	2	3	4	5
---	---	---	---	---

viii) Counter- prescribing or responding to symptoms.

1	2	3	4	5
---	---	---	---	---

ix) Laboratory and analytical skills.

1	2	3	4	5
---	---	---	---	---

If you are a tutor in community pharmacy please proceed to the last page of the questionnaire to make any comments you feel about the pre-registration year.

If you do not wish to, thank you very much for your time and help in this survey. Please use the reply-paid envelope enclosed.

If you are a hospital or industry tutor I am interested in seeking a small amount of further information specific to your training. I would be very grateful if you could complete the next section relevant to your branch.

QUESTIONS SPECIFIC TO HOSPITAL TUTORS

- 1. What order of importance would you give these criteria that may be used to choose assistant tutors responsible for training the pre-registration students in the various specialities in hospital pharmacy. (Please indicate importance by ranking the following factors from 1 to 5 with 1 being of the greatest importance)**

Assistant tutor concerned is the pharmacy specialist in that field.

Years of experience in pharmacy

Anyone who is available at the time

Assistant tutor has had previous experience of training

Assistant tutor has a post-graduate qualification e.g. Diploma, MSc.

Please state any other criteria you feel important.

- 2. What method do the assistant tutors use to report back to you about student performance and how often?**

- 3. Have the assistant tutors been trained to do the competency-based assessment? If not, please state why not and if so how was the training done.**

4. Do you feel that the students get a complete view of hospital pharmacy at the end of their training?

5. Do you feel that the pre-registration manual adequately covers all possible aspects of hospital training?

If not, please state those areas you feel are not covered or covered inadequately.

6. Do you feel that the competency assessment covers all possible aspects of hospital training?

If not, please state any aspects that could be covered.

7. Do you feel that the examination adequately tests the students' skills in hospital pharmacy?

If not, please state your opinions of the pre-registration examination with regards to hospital training and pharmacy.

8. Do any of your students spend any time in community pharmacy during their training?

If yes, please state how long and why?

If no, please state if any have requested to do so this year.

9. Generally how does the training differ for the students who come for only 6 months, the other 6 months being spent in industry or community?

If you would like to make any more comments about the pre-registration training please turn to the last page of the questionnaire.

If not, thank you very much for your time and patience in completing my questionnaire.

Please use the reply-paid envelope provided.

QUESTIONS SPECIFIC TO INDUSTRY TUTORS

1. Do you feel that the pre-registration examination covers those areas appropriate to industrial training?

If no, please state your opinions about the pre-registration exam with regards to industry training

2. Do you feel that the pre-registration manual covers all aspects of industry training?

If not, please state those areas that have not been covered or covered inadequately.

3. Do you feel that the competency-based assessment covers all the important aspects of industry training?

If not, please state those areas that have not been covered.

4. Please tick those of the following factors you realistically plan to achieve within a 6 month training period with pre-registration students.

An awareness of the pharmacist's role in pharmaceutical industry _____

For the student to work in only some specialised areas and obtain a good appreciation of those areas _____

For the student to spend some time in all of the possible areas within your industry. _____

To create an interest in industry for the student so that they may choose it as their vocation at the end of their training. _____

An obligation to the RPSGB to fulfil each year. _____

If you would like to make any more comments about the pre-registration training please use the space provided below.

If not, thank you very much for your time and patience in completing my questionnaire. Please use the reply-paid envelope provided.

ANY ADDITIONAL COMMENTS:

Thank you very much for taking the time to complete this questionnaire. If there are any problems or you would like to contact me about any aspects of the pre-registration training. I would be delighted to hear from you.

Yours sincerely

MANDEEP MUDHAR
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APPENDIX 5

PHARMACY UNDERGRADUATE EDUCATION, PRE-REGISTRATION TRAINING AND CONTINUING EDUCATION

**Copy of the questionnaire used for the 1996 survey of pharmacists who
registered to practice in 1993**

SURVEY OF PHARMACISTS WHO QUALIFIED IN 1993

INSTRUCTIONS FOR FILLING IN THIS QUESTION BOOKLET

Thank you for filling in this Question Booklet. I believe you will find it easy and interesting and it should only take you a few minutes.

Most of the questions can be answered by putting a tick \surd in a box next to the answer you want to give. Please ignore numbers in the boxes, these are for analysis purposes.

The number at the back of the Question Booklet is simply there to identify non-respondents and send them a reminder letter. If you do not wish to answer the Questionnaire, please send it back as it is and you will not receive a reminder.

When you have finished, please post the Booklet using the enclosed reply-paid envelope

Finally, you can be assured that your responses will be treated in strictest confidence and your name and address will not be made available to anyone.

I appreciate the time you are giving to fill in this booklet and would like to emphasise that your views are *very important* in identifying the needs of recently qualified pharmacists and improving the undergraduate course and pre-registration training.

If there are any queries, please contact me on 0121-359-3611 ext.4678.

THANK YOU VERY MUCH FOR YOUR TIME

A SURVEY OF PHARMACISTS WHO QUALIFIED IN 1993

Section 1: WORK DETAILS

Q1. In which area of pharmacy did you undertake your pre-registration training?

Branch of pre-registration training	√ Please Tick
Single Community	1
Community chain (2-10 shops)	2
Community chain (11-50 shops)	3
Community chain (> 50 shops) Please state the name of the chain	4
Hospital	5
Industry and Hospital	6
Industry and Community	7
Community and Hospital	8
NPA	9
Other, please specify	

If you are not currently practising as a pharmacist please move to Q20.

Q2. State in which area you are currently working and indicate if it is full or part-time (less than 35 hours a week). Please tick appropriate box

Area of current work	Full-time	Part-time <35hrs/week
Owner of Independent Community Pharmacy	1	15
Manager/Pharmacist of Independent Community Pharmacy	2	16
Pharmacy Manager for a multiple community pharmacy group	3	17
Pharmacist for a multiple community pharmacy group	4	18
Relief Pharmacist for a multiple community pharmacy group	5	19
Area/District Pharmacist	6	20
Community Locum pharmacist	7	21
Hospital pharmacy: Please specify your grade and job title: _____	9	23
Industry: Please specify your job title: _____	10	24
Teacher practitioner	11	25
Pharmacy Academia	12	26
Full-time Pharmacy post-graduate student e.g. PhD	13	27
Other, Please specify your role and job title; _____	14	28

Q3. How satisfied are you having chosen pharmacy as a career?

Very Dissatisfied	Dissatisfied	Satisfied	Very satisfied

Q4. How many hours on average do you officially work each week? Please tick box.

Hours of work a week	√
Less than 35	
35-38	
39-45	
46+	

Q5. How long have you held your current job position? Please tick box.

Period of time	√
0-6 months	1
6-12 months	2
Between 1 and 2 years	3
Between 2 and 3 years	4
Since end of pre-registration training	5

Q6. What were you doing before your current position, excluding your pre-registration training. (e.g. branch and position of work, travel, post-graduate education etc.)

Section 2: ATTITUDES TO PHARMACY

Q7. To what extent do you agree or disagree with the following statements in relation to your career? Please tick appropriate box

Statements	Strongly Agree	Agree	Disagree	Strongly Disagree
I want to be promoted from my current position to one with more responsibilities within the next two years.	1	2	3	4
I want to be continuously promoted every few years to positions of higher responsibility				
I am happy with my current position and it's responsibilities for at least the next five years.				
I am happy with the public perception of my professional status as a pharmacist				
I am satisfied with the awareness the public have of my role as a pharmacist				
I regard myself as a full member of the primary health care team	1	2	3	4
I am satisfied with the salary I get for my current job.	1	2	3	4
My day-to-day work detail is far too demanding for one pharmacist to perform satisfactorily				
My day-to-day work detail is boring and does not offer any new challenges				
My day-to-day work detail does not fully utilise my professional knowledge				
My day-to-day work detail is not intellectually stimulating enough for a pharmacist	1	2	3	4
I will not hesitate in moving to another location should I be offered a better job				
I have an adequate number of staff to assist me in my current position.				
I am satisfied with the training the staff who work with me have				

Q8. To what extent do you agree or disagree with the following statements relating to pharmacy in the future? Please tick appropriate box

	Strongly Agree	Agree	Disagree	Strongly Disagree
It will be increasingly difficult to own an independent community pharmacy in the future	1	2	3	4
The 'New Age' initiative will result in a positive future for pharmacy				
Pharmacy cannot survive unless it establishes more remunerable roles in addition to the current ones				
The extending of professional roles of pharmacists will lead to increased recognition amongst all other health professionals				
The development of a wider professional role implies that mandatory continuing education will become essential				
Supermarket pharmacies pose a threat to the professional image of the community pharmacy				
The future of community pharmacy is threatened by continuous multiple pharmacy expansion	1	2	3	4
The prospects of progression within hospital pharmacy are more difficult due to stagnation of pharmacists in senior positions				
Eventually, most people will have to pay at the point of use for their own health care.				
The use of mail-order services to fulfil prescriptions will become a reality in the future.				
I would advise any young person to take up pharmacy as a career				

Q9. Rank in order of priority the impact of the following organisational changes upon your current work environment.

(Please select only SIX of the below and rank them in a descending order with rank 1 being the change that would most improve your work and 6 being the least)

Organisational changes	Rank
Employ another full-time pharmacist	
Employ a part-time pharmacist	
Employ a dispensing technician/assistant	
Better training of support staff	
Better organisation of staff hours	
Provision of adequate and regular breaks	
Offer a work effort related monetary bonus	
Provide well defined criteria for in-house career progression	
Provision of a better computer labelling system	
Less paper-work to do	
Less management responsibility of staff	
Better support from superiors	
Closer liaison with local medical practitioners	
Closer liaison with other health professionals	

Section 3: THE PHARMACY UNDERGRADUATE COURSE

Q10. To what extent do you agree or disagree with the following statements about the undergraduate course with respect to your knowledge and ability in your current job. Please tick appropriate box

Statements	Strongly agree	Agree	Disagree	Strongly disagree
The course provided a sound basis of Law and Ethics for me to apply in practice	1	2	3	4
The course provided a good foundation of pharmaceutical sciences relevant to pharmacy				
The course provided a satisfactory theoretical background for the branch I work in				
The course should be structured so that the final part gives an opportunity to specialise in a branch of pharmacy				
The course should provide a period of 'internship' where one can spend some time working in a branch of pharmacy of their choice as an assessable part of the course (not counted as pre-registration training)	1	2	3	4
The pharmacy dispensing classes gave a true insight of the demands currently placed on me as a pharmacist				
In addition to dispensing practicals, there ought to be more discussion and problem-solving of real-life case studies which test our legal and ethical knowledge in practice.				

Q11. The following are possible objectives of the undergraduate course. Please indicate the extent to which you feel each of these was achieved in the undergraduate course you studied by ticking the appropriate box.

Objectives	Fully Achieved	Partly achieved	Not achieved but ought to have been	Not possible to achieve in the course
To adapt to an environment where there is a constant demand to provide answers and make decisions on the spot.				
To communicate and counsel patients and members of the public	1	2	3	4
To communicate effectively with other health professionals				
To understand the roles and needs of other health professionals	1	2	3	4
To work in a situation where a multitude of activities require constant supervision				
To work in a real-life situation where prescriptions are poorly written, patient responses are vague and problems can take frustratingly long to solve				
To organise and manage staff to provide the best possible support				
To help understand the attitudes and beliefs of patients and their health in any location				

- Q12. Using the knowledge you feel you use regularly, never use, lack or require more of in your current job as a guide, should the following subjects be expanded, contracted or left unchanged in the new four-year undergraduate course?**
Please tick appropriate box.

Subjects	Expand	Contract	No change
<i>PHARMACEUTICAL CHEMISTRY</i>	1	2	3
a) organic chemistry			
b) stereochemistry			
c) analytical chemistry			
d) biochemistry			
<i>PHARMACEUTICS</i>	1	2	3
a) formulation			
b) pharmacokinetics			
d) drug delivery systems			
e) bioavailability			
<i>MICROBIOLOGY</i>	1	2	3
a) aseptics			
b) chemotherapy			
c) immunology			
d) pharmaceutical microbiology			
<i>PHARMACOLOGY AND CLINICAL</i>	1	2	3
a) physiology			
b) pharmacology			
c) Clinical Pharmacy			
d) Clinical pharmacy by internship in a hospital environment			
<i>PHARMACY PRACTICE & MISCELLANEOUS</i>	1	2	3
a) law and ethics			
b) dispensing practicals	1	2	3
c) responding to symptoms			
d) developing communication skills			
e) Practice research methodology	1	2	3
f) Study of providing home health care for homebound patients and/or the elderly e.g. parental (TPN) therapy, monitoring compliance, mobility aids and advice			
g) Study of drug use and abuse and it's effect on health			
h) Study of attitudes towards sex and its effects on e.g. teenage pregnancy, transmission and prevalence of STD's			
i) Environmental issues affecting health			
j) Study of dietary habits of different groups of the population	1	2	3
k) Study of different cultural health beliefs and illnesses affecting specific ethnic groups			
l) Study the understanding of factors such as poverty and education and their implications on health care			
m) computer-aided learning	1	2	3
n) Management and organisation of business and employees			
o) Information technology and computer literacy relevant to computer use in pharmacy			

Section 4: THE PRE-REGISTRATION TRAINING YEAR

Q13 Looking back to your pre-registration year, which of the following aspects could have been improved to provide you with a better overall training? Please tick appropriate box.

	Could have been considerably improved	Could have been improved to some extent	Did not need improvement
A pre-registration tutor with better training skills			
A pre-registration tutor with better knowledge of my requirements to practice pharmacy			
How to organise and manage staff and their day-to-day affairs			
A better guidance of areas of training to be included in the examination from the tutor			
More time off to prepare for the examination	1	2	3
The extent of time spent in another branch of pharmacy			
A pre-registration manual with easier to understand aims and objectives			
A pre-registration manual with a more detailed syllabus for the registration examination			

Q14. Looking back to your pre-registration year, which of these changes, if included, would have improved your overall training? Please tick appropriate box.

	Significant improvement if included	Some improvement if included	No improvement if included
A three-month period in the hospital sector for community-based trainees and the community sector for the hospital and industrial trainees			
A compulsory 6-month split pre-registration year	1	2	3
Mandatory continuing education during training specifying areas requiring study			
Clearly defined quality criteria for pharmacists wishing to act as a tutor			
Clearly defined quality criteria for pharmacy premises to be used for training			
An examination that includes practical observation of skills and an oral test instead of the current format			

Section 5: CONTINUOUS EDUCATION

Q15a) Below is a list of continuing education programs and methods. Indicate which applies to you for each of them by placing a tick in the appropriate box.

(Please leave those methods not relevant to you as blank.)

Continuing Education Programs	Have completed	Currently participating	Will participate in future	Will Not participate
CPPE workshops	1	2	3	4
CPPE manuals + submission of MCQ questions in manuals				
College of Pharmacy Practice	1	2	3	4
A hospital-sponsored Diploma in Clinical Pharmacy				
A community pharmacy-sponsored Diploma in Clinical Pharmacy				
A community pharmacy-sponsored Diploma or MSc in Community-based Clinical P'cy				
A self-sponsored Diploma in Clinical P'cy	1	2	3	4
A self-sponsored Diploma or MSc in Community-based Clinical Pharmacy				
Other Diploma, MSc or PhD				
A management-qualification e.g. MBA				

Q15b) Below are a list of journals relevant to pharmacy. Indicate the extent to which you read them by ticking the appropriate box. (You may use the section at the bottom to write down other journals)

Journals	Read and assimilate regularly	Read and assimilate only if applicable to me	Do not read or assimilate	No access to journal
Clinical section of the Pharmaceutical Journal				
Law and Ethics updates in the Pharmaceutical Journal				
Institute of Pharmacy Management International Journal				
The Chemist and Druggist Magazine	1	2	3	4
The Pharmacy Magazine				
MEREC bulletin				
Community Pharmacy Journal	1	2	3	4
British Medical Journal				
Lancet				
International Journal of Pharmacy Practice	1	2	3	4
Others; State the title(s) and tick box				

Section 6: THE EXTENDED ROLE

Q16. Please tick the box that best represents the opportunity and involvement that you have in the following functions as a pharmacist.

	Have opportunity and involved	Have opportunity, but no involvement yet	Have opportunity, but no wish to be involved	No opportunity, but want involvement	No opportunity, and do not want any involvement
Use of referral forms to GP's with your patient diagnosis					
HIV testing	1	2	3	4	5
Therapeutic Drug Monitoring					
Administration of SC and IM injections e.g. flu-vaccines					
Development of prescribing formularies					
Development of medicine and health policies in schools	1	2	3	4	5
Participation in health promotion projects					
Syringe and Needle exchange scheme					
Pharmacist prescribing for specified current POM medicines					
Management of repeat prescribing	1	2	3	4	5
Cholesterol testing					
Blood Pressure monitoring					
Advice to doctors on drug selection	1	2	3	4	5
Management of all medicines in residential and nursing homes					

Section 7: PERSONAL INFORMATION

The following questions are solely to enable me to ascertain that the respondents to this questionnaire are representative of the gender and background of all pharmacists in the profession.

Q17. Are you?

Male	
Female	

Q18. How would you describe your ethnic origin ?

	√		√
WHITE	1	PAKISTANI	6
BLACK-CARIBBEAN	2	BANGLADESHI	7
BLACK-AFRICAN	3	CHINESE	8
BLACK-OTHER	4	OTHER ETHNIC GROUP Please specify	9
INDIAN	5		

Q19. Which school of pharmacy did you study in?

Area	√	Area	√
Aberdeen	1	Leicester	9
Aston	2	Liverpool	10
Bath	3	London, Brunswick Square	11
Belfast	4	London, King's College	12
Bradford	5	Manchester	13
Brighton	6	Nottingham	14
Cardiff	7	Portsmouth	15
Glasgow	8	Sunderland	16
		Other	17

FOR NON-PRACTISING PHARMACISTS

Q20 If you are not practising as a pharmacist, select which of the following best applies to you.

Unemployed	
Seeking work in pharmacy	
Working but not in pharmacy	
Studying or intending to study a course not relevant to pharmacy	
Other reason	

Please briefly state the reasons you have chosen this role:

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THANK YOU FOR YOUR CO-OPERATION

Please return to:

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PLEASE USE THE REPLY-PAID ENVELOPE PROVIDED