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Contact lens prescribing trends in the UK hospital eye service

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ABSTRACT

Purpose: The aim of this study was to evaluate the types of contact lenses fitted by hospital optometrists within the Midlands region of the United Kingdom (UK).

Method: A questionnaire was sent to all the lead optometrists of the Midlands Hospital Optometry Group (MHOG). This group includes optometry hospital eye departments within the Midlands region of the UK. The questionnaire requested information of their last ten contact lens fitting appointments. Details of the patient's age, gender, lens type, wearing times, and presenting condition were retrospectively taken from the patients' records using the appointment diary to identify the last ten patients fitted with contact lenses.

Results: Details from a total of 109 contact lens fits were collected. This included 45 females and 64 males with a mean age of 39.4 ± 17.4 years. The mean wearing time was 6.3 ± 1.0 days per week and 10.7 ± 5.1 h per day. Sixty-one percent of the contact lenses fitted were for patients with keratoconus and over half of all the contact lenses fitted were corneal rigid gas permeable lenses.

Conclusion: This study highlighted that the main reason for fitting contact lenses in hospital contact lens practice is primary corneal ectasia, and mainly keratoconus. Whilst most patients with keratoconus were fitted with corneal rigid gas permeable contact lenses, around 1 in 6 were fitted with soft contact lenses. This study addresses a gap in the literature about contact lenses fitted in UK hospitals and how they differ from community contact lens practice.

1. Introduction

Contact lenses could be described as an elective product since most patients elect to wear conventional contact lenses, as an alternative method of correcting their refractive error, instead of spectacle lenses [1,2]. Routine contact lens practice is a highly commercial arena where information on the types of contact lenses that are most commonly prescribed by practitioners is useful in marketable terms [3]. The literature is rife with papers describing prescribing patterns in a certain country or trends over many years [4–11]. Often the way that data is collected is not ideal, in terms of recruitment or response rates, but it remains a useful metric that is frequently cited, since there are limited alternative sources of this type of information. One alternative way to investigate the numbers and types of contact lenses fitted would be information from manufacturers on the numbers of different types of contact lenses that they sell. However, due to the commercial sensitivities of such information it rarely will find its way to the public forum. Speciality contact lens fitting has shown the most growth over recent

years compared to routine contact lens work and remains a small, but crucial, segment in the field [12,13]. No real definition of what a speciality contact lens is exists and the definition could be argued differently [14–16]. Speciality contact lenses would include orthokeratology, but this would remain an elective fitting as the patient is choosing orthokeratology as an alternative to other modes of refractive correction or maybe as a method of to control myopia progression. Even contact lenses to control myopia progression would be deemed as an alternative to wearing spectacle lenses. Orthokeratology and contact lenses to control myopia progression would typically be fitted in community contact lens clinics. Additional categories of speciality contact lenses would be those fitted because the patient's optimum vision cannot be reached with spectacles and contact lenses would offer an improvement in best vision to the patient. Examples of these types of speciality contact lenses would be those fitted for keratoconus or aphakia or post-corneal surgery. Additionally, speciality contact lenses may be fitted to manage a pathology or as a bandage contact lens to aid healing [17]. These latter types of speciality contact lenses are more

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Table 1

Shows the conditions for which that contact lenses were fitted and the types of lenses fitted (n = 109).

	Soft	RGP	Scleral	Mini-scleral	Piggy-back	Hybrid	TOTAL
Aniridia		1					1
Aphakia	7	1					8
Bandage	2						2
Blepharospasm			1				1
Cosmetic	2	1	3				6
Cross-linking	3						3
Keratoconus	9	45	4	4	3	2	67
Pellucid marginal degeneration	1	1		1			3
Post-graft	1	5		1			7
Pseudophakia	1						1
Refractive	5	4					9
Secondary corneal ectasia		1					1

likely to be fitted in a hospital eye clinic, although there are community practices that also specialise in this type of work. Generally, most scleral contact lenses would be classed as speciality contact lens fitting [18], although some community-based practitioners will also fit them as required [19,20]. In terms of what types of speciality contact lenses are fitted and why, there seems to be very little information in existence and information that exists in the literature is out of date and often relates to out-dated products [21–25].

In the United Kingdom (UK) hospital optometry usually manages complex contact lens patients that are referred into the service from ophthalmologists, community optometrists and medical practitioners. These are cases where contact lenses are fitted out of necessity. Little information is available in the literature as to the type of contact lenses that are fitted in UK hospital contact lens clinics. This study addresses that gap in the knowledge base with information from hospital contact lens clinics in the UK.

2. Methods

A questionnaire was generated and sent to all the lead optometrists of the Midlands Hospital Optometry Group (MHOG). This group includes Optometry hospital eye departments within the Midland region of the UK. The questionnaire asked for information of the last 10 contact lenses fitted at their hospital. The data was retrospectively collected from their computerised hospital records using their electronic diary systems to identify the last 10 patients fitted with contact lenses. The lead optometrists completed the required information and then sent the questionnaire back to the authors. The questionnaire was administered in February 2020.

3. Results

Questionnaires were given to 12 different hospitals within the MHOG region of the UK. A completion rate of 92% was achieved with only one questionnaire not returned. One hospital only gave information from the last nine fits, so in total information was analysed from the last 109 contact lens fits. The data was treated collectively and inter-hospital comparison was not undertaken, since the aim of the study was not to compare each hospital but rather to get an impression of the prescribing trends overall within this region of the UK.

The data was collected from 109 contact lens fits, 45 females and 64 males. The mean age (\pm standard deviation) was 39.4 ± 17.4 years (minimum 0, maximum age of 88 years). There were two contact lens fits for patients aged one year or less, if these two patients are excluded then the mean age was 40.1 ± 16.7 years (minimum 13, maximum 88 years).

The wearing times for the data set varied and this was dependant on why the contact lenses were being worn. The mean wearing time was 6.3 ± 1.0 days per week (minimum 2, maximum 7 days) and 10.7 ± 5.1 h per day (minimum 2, maximum 24 h). Five patients were wearing extended wear contact lenses for 24 h per day, 7 days per week and these

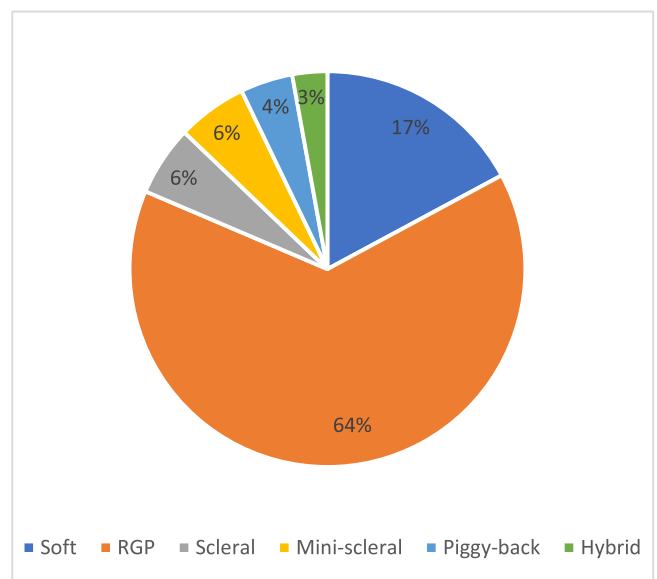


Fig. 1. Shows the types of contact lenses fitted to the patients who had keratoconus (n = 70).

were replaced monthly. If these five are excluded the mean wearing time was 6.3 ± 1.1 days per week (minimum 2, maximum 7 days) and 9.6 ± 3.5 h per day (minimum 2, maximum 16 h). The wearing times may be influenced by the reason that the patient was wearing contact lenses, as seen in Table 1.

Over half of the contact lenses fitted were corneal rigid gas permeable contact lenses (RGP), two were hybrid contact lenses. Soft contact lenses were the second largest group of types of contact lenses fitted. Scleral contact lenses were defined according to the current literature as those at least 6 mm larger than the horizontal visible iris diameter and mini-scleral contact lenses were those up to 6, larger than the horizontal visible iris diameter [26,27].

Keratoconus was the main reason that patients were fitted with contact lenses with 61% of the patients needing contact lenses for this reason. One of these had pathological dry eye and another also had extreme atopy. Furthermore, the three patients who underwent corneal cross-linking, also had keratoconus. The contact lens type worn by this group of 70 patients is shown in Fig. 1, where it can be noted, that whilst the majority were wearing rigid gas permeable corneal contact lenses, there was a sizeable number wearing soft contact lenses. There were two patients who wore a soft contact lens in one eye and a rigid gas permeable corneal contact lens in the other eye.

Three of the post-graft patients had keratoplasty for keratoconus and the other four had some type of keratoplasty related to a corneal dystrophy; the type of keratoplasty was not identified in this study and all

categories of lamellar keratoplasty and penetrating keratoplasty were all grouped as post-graft. There was one patient with secondary corneal ectasia which was related to previous radial keratotomies. Four of the eight patients wearing contact lenses for aphakia had congenital cataracts, one additional patient had senile cataract but without an intraocular lens and one of them was aphakic due to trauma. The single pseudophakic patient had Marfan's syndrome with associated lens subluxation. Of the six patients wearing contact lenses for cosmetic reasons, there were two each from the sub-groups of blind eyes, post-trauma (one was a chemical injury and the other was blunt trauma) and monocular diplopia. In the refractive group there were nine patients, seven of them had high ametropia (myopia, hyperopia and/or astigmatism). In this group one patient had post-cataract surgery anisometropia and finally one patient was undergoing a contact lens trial to assist with the calculation of the refractive outcome from their upcoming cataract surgery.

4. Conclusions

The main reason for fitting contact lenses in hospital contact lens practice in the region served by the Midland Hospital Optometry Group seems to be primary corneal ectasia, and mainly keratoconus. Whilst this may not be surprising it is interesting to note additional, but less frequent, reasons for wearing contact lenses such as high ametropia, post-surgical complications (such as corneal graft, cataract surgery and corneal cross linking) as well as trauma and aniridia. In many of these cases the contact lenses become more medical than refractive. This study does highlight some noticeable differences between patients fitted with contact lenses at UK hospitals versus those fitted in routine community contact lens practice. For example the mean age of patients in this study was around 40 years of age with more males than females, whereas community contact lens practice typically shows mean ages of patients to be in their late twenties and a ratio of 2:1 in favour of females in typically seen [1,2].

Since the reasons for fitting contact lenses in hospital contact lens practice are so different most community contact lens clinics it is no wonder that the types of lenses are so different. One surprise finding was the number of patients with keratoconus wearing soft lenses. Whilst most patients with keratoconus were fitted with corneal rigid gas permeable contact lenses, around 1 in 6 were fitted with soft contact lenses. This demonstrates the range of options that are available nowadays for tackling patients with this condition. Scleral and mini-scleral lenses appear to be growing in global popularity and collectively they represented 12% of all the contact lenses fitted to the patients served by the Midland Hospital Optometry Group and were fitted to 13% of the patients with keratoconus. It would be interesting to see how this may change over the coming years and warrants further studies of this type in the future.

Declaration of Competing Interest

The authors declare that they have no known competing financial

interests or personal relationships that could have appeared to influence the work reported in this paper.

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