ORIGINAL ARTICLE

# Transfer of patients from health care centres to special care services: analysis of travel distances in Nordic countries

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## ABSTRACT

**Objectives.** This paper highlights the importance of analysing patient transportation in Nordic circumpolar areas. The research questions we asked are as follows: How many Finnish patients have been transferred to special care intra-country and inter-country in 2009? Does it make any difference to health care policymakers if patients are transferred inter-country?
**Study design.** We analysed the differences in distances from health care centres to special care services within Finland, Sweden and Norway and considered the health care policy implications.
**Methods.** An analysis of the time required to drive between service providers using the "Google distance meter" (http://maps.google.com/); conducting interviews with key Finnish stakeholders; and undertaking a quantitative analyses of referral data from the Lapland Hospital District.
**Results.** Finnish patients are generally not transferred for health care services across national borders even if the distances are shorter.
**Conclusion.** Finnish patients have limited access to health care services in circumpolar areas across the Nordic countries for 2 reasons. First, health professionals in Norway and Sweden do not speak Finnish, which presents a language problem. Second, The Social Insurance Institution of Finland does not cover the expenditures of travel or the costs of medicine. In addition, it seems that in circumpolar areas the density of Finnish service providers is greater than Swedish ones, causing many Swedish citizens to transfer to Finnish health care providers every year. However, future research is needed to determine the precise reasons for this.
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**Keywords:** density, distance, health services, accessibility

## INTRODUCTION

This paper explores several questions that address the provision of health care services in the circumpolar areas of Finland, Norway and Sweden. In many countries, health professional shortages and service delivery challenges exist in rural areas. For this reason, research has sought to identify differences in access within rural populations on a much finer geographical scale (1). In Greenland (2) and Alaska (3), the fact that so many patients are located hundreds of miles from service providers is the greatest obstacle to delivering quality care. Therefore, independent of the national context, patients in rural areas face long journeys and high costs in their attempts to obtain health care (4). Among Saami reindeer herders in Finnish, Norwegian and Swedish Lapland, the distance to health services varies significantly because some families move their herds as far as 600 kilometres from the Norwegian coast of the Arctic Ocean to Bothnian Bay, where Sweden's coastline meets that of Finland (5). Distances, population density and health care utilization in the rural areas has been widely studied (6). However, multidisciplinary knowledge from geographical health sciences, health economics and health management and policy sciences have not been applied to research that focuses on health service accessibility in circumpolar areas.

Identifying the optimal balance between the density of service providers and patients' needs has been a theoretically and empirically intriguing question in the field for years. The complexity of this apparently simple issue is based on several underlying concerns. First, the potential accessibility to services and the actual utilization of such services should be jointly analysed in the context of the epidemiologic aspects of native health (7). In some cases, patients do not require appointments with health care professionals at all, as the Internet and telemedicine create the basis for quality care (3). In addition, the desire for patient involvement may vary tremendously among different countries (8). In some studies, drive-time rather that distance is argued to be a more accurate measure of access for patients in peripheral and rural areas. However, even if geographical access to health services is good, remoteness affects both rural and urban areas; studies concentrating purely on rural areas may underestimate the role of geographical barriers to accessing health care. A sizeable minority of households still had no car in 1991, and only a few had more than 1 car, particularly in areas very close to and very far from hospitals (7). However, in some of the studies, areas that were more than 25 km from an acute hospital were classified as "remote" and characterized in terms of their rural location, deprivation (lack of access to health care), age structure and health status of the population (9). In this study, health care centres over 20 km from a special care facility (e.g., hospital) have been classified as "remote."

The aim of this paper is to address the following 2 questions:

1) How many Finnish patients have been transferred to special care intra-country and inter-country between 1 January and 31 December 2009?
2) Does it make any difference to health care policy if patients are transferred across national borders?

In particular, we try to explore the implications of special care in relation to these questions. Our analysis has broader implications

for considering how to organize citizens' access to services on the basis of distance to services rather than national boundaries and the advantages and disadvantages of a differently organized network of circumpolar services for patients in Nordic countries.

## MATERIAL AND METHODS

In our pilot study, we located the hospitals (secondary care) and public and private health care centres (primary care) in the circumpolar areas of Finland, Norway and Sweden. We then calculated the distances between the two in each country. The empirical data for the paper were collected from the institutes of national statistics in Finland, Norway and Sweden. In addition, the addresses of services providers were gathered from the Association of Finnish Local and Regional Authorities, Norwegian Directorate of Health and Northern Norway Regional Health Authority and from HSI Förlag AB in Sweden. In addition, we interviewed 4 of the employees in the Lapland Hospital District, Finland, and analysed the documents provided by the Lapland Hospital District. Not all of these data are presented here.

The distances and drive times between health centres and hospitals were measured using the "Google distance meter" (http://maps.google.com/). Unfortunately, Google does not explain how it calculates average driving times. In the case of ferries and exceptional topographic features, this information would be important. Thus, we refer to our method simply as "the remapping of the health road map."

However, in this paper, we focus on the importance of distances between Finnish health care centres in the case of referrals to specialist care locations in the Nordic circumpolar area. Therefore, we include data from both the central Hospital of Rovaniemi in Finland despite its location slightly below the Arctic Circle. Military hospitals or centres for border guards are not included and health care centres closer than 20 km to hospitals are excluded because from these facilities patients are referred to the Central Hospital of Lapland in Rovaniemi.

Finally, we analysed how the distances between national borders can affect travel times. We wanted to determine if distances and travel times from Finnish health care centres to special health care services are shorter between or within nations.

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## RESULTS

Within Finland, the shortest distance between a rural health centre and a hospital is 56 km and the longest distance is 433 km. The longest drive-time and distances are in Finland; for example, it is 433 km and over a 6-hour drive-time between Utsjoki health care centre and Lapponia Hospital in Kemijärvi. However, in Utsjoki, patients are referred to the Central Hospital of Lapland in Rovaniemi and not to Lapponia Hospital (Kylänen M, Faculty of Social Sciences and Business Studies, Department of Social and Health Management, University of Eastern Finland, Kuopio, Finland. Telephone interview with nurse Timo Gerdt, Utsjoki Health Care Centre, Utsjoki, Finland. 2010 June 7). The distance between the Central Hospital

of Lapland and Utsjoki's health care centre is 453 km and the drive-time is about 6 hours and 20 minutes.

Within Sweden, the shortest distance is 95 km and the longest distance is 142 km, and in Norway it is 33 km and 277 km, respectively. In addition, the shortest distances and drive-times are in Norway. However, in some cases, distance and drive-time are less closely related. For example, the distance between Hasvik health care centre and Hammerfest Hospital is 84.7 km, but the average drive-time is 2 hours and 9 minutes because the geography permits an average speed of only 39.53 km/h (cf. ferries). In Sweden, the drive-times range between 1 hour (70 km) and 2 hours (150 km). Naturally, the long drive-time with short distance can also be found in Finland and Sweden, but these are exceptions. This gives us the basis for arguing that at least some Finnish patients should be referred to Norwegian hospitals that are closer than the Central Hospital of Lapland in Rovaniemi.

Therefore, in order to address this concern and answer our research questions, we compared the number of referrals and distances between Finnish health care centres and special care facilities in Finland, Norway and Sweden in the 2009 calendar year. Interestingly, we found that in terms of distance and drive-time Finnish patients could have been referred to Norwegian or Swedish special care centres (Table I). This alternative has been recognized in a formal agreement between Finland and Norway (10), but is rarely applied in practice (Kylänen M, Faculty of Social Sciences and Business Studies, Department of Social and Health Management, University of Eastern Finland, Kuopio, Finland. Telephone interview with nurse Timo Gerdt, Utsjoki Health Care Centre, Utsjoki, Finland. 2010 June 7). Most Finnish patients with special care needs are sent to the Central Hospital of Lapland in Rovaniemi. The village of Karigasniemi is also near the Utsjoki Health care centre and the Karasjok health care centre in Norway, but according to interviewees only half of the residents of the village are referred to the Karasjok health care centre where they receive some special care while most have to travel to Rovaniemi in Finland.

Table I raises several questions. First, why have only 6 patients been transported to Karasjok from Utsjoki even if the travel time by road to Rovaniemi is over 4 hours 38 minutes longer? Second, why have patients not been sent to Kiruna from Karesuvanto at all? According to one interviewee (Vuori J, Faculty of Social Sciences and Business Studies, Department of Social and Health Management, University of Eastern Finland, Kuopio, Finland. Telephone interview with chief physician, Lapland Hospital District, Heta, Finland. 2010 November 15), the main reason is that the Social Insurance Institution of Finland covers

**Table I.** Referrals from 2 Finnish health care centres and distances to special care hospitals in the Nordic circumpolar area, 2009.

| Centres (referrals from) | Hospital (referrals to) | Referrals per year 2009 | Road travel distance (km) | Road travel time (min) |
|---|---|---|---|---|
| Karesuvanto | Rovaniemi, Finland | 286 | 318 | 278 |
| Karesuvanto | Tromso, Norway | 0 | 275 | 234 |
| Karesuvanto | Kiruna, Sweden | 0 | 179 | 150 |
| Utsjoki | Rovaniemi, Finland | 469 | 453 | 380 |
| Utsjoki | Karasjok, Norway | 6 | 115 | 98 |

the expenditures of travel and medicine only intra-country, not inter-country, even if the Lapland Hospital District has given permission for cross-border referrals since 1990. Interestingly, all the referrals from Utsjoki are sent first to Rovaniemi, not straight to Karasjok. However, according to the call statistics (11) (Vuori J, Faculty of Social Sciences and Business Studies, Department of Social and Health Management, University of Eastern Finland, Kuopio, Finland. Telephone interview with the call and referral statistics, cost-accounting manager, Lapland Hospital District, Rovaniemi, Finland. 2010 November 1) provided by the municipality of Muonio, Swedish patients use a lot of Karesuvanto primary health care services; in 2008, 255 patients were from Kiruna, and in 2007, there were 259. We found that the federation of municipalities has been able to invoice for these services through Norbotten Langstinget in Sweden.

## DISCUSSION

On the basis of our analysis, Finnish and Norwegian health care service providers need to strengthen their formal collaboration in circumpolar areas, because it will improve access to health services (10). However, it seems that we can overcome difficulties by answering the following questions: If a key issue of service quality for patients is to be served in their language, how can we increase services with all languages in every country? If the policy of the Social Insurance Institution of Finland is against quick access, there is a good reason to compare the cost structures of Norwegian, Swedish and Finnish service providers. Basically, analysing the issue of language means that services need to be available in Lapp as well (10). This is a real challenge, because there are few Lapp-speaking physicians (Vuori J, Faculty of Social Sciences and Business Studies, Department of Social and Health Management, University of Eastern Finland, Kuopio, Finland. Telephone interview with chief physician, Lapland Hospital District, Heta, Finland. 2010 November 15). The Social Insurance Institution of Finland should begin to cover the expenditures at least in those cases in which the distance differences are significant. The main reason for this is that travel costs from Utsjoki to Rovaniemi are much higher than from Utsjoki to Karasjok. In addition, we should consider the option that patients from Utsjoki and Karigasniemi are usually sent to Karasjok, which means having to provide more services in Finnish there. All the 469 referrals cannot be treated in Karasjok, therefore any decline in this level will make a difference.

For example, a return taxi ride during the day (from 6 a.m. to 8 p.m.) from Utsjoki–Rovaniemi–Utsjoki that is covered by the Social Insurance Institution of Finland cost €1,266.80 in 2010. If the Social Insurance Institution of Finland covered the travel cost for 200 patients (€65,160) to Karasjok from Utsjoki, government costs would be reduced in a year by €188,200 and patients would have quicker access to care. Over 5 years the Finnish government could save approximately €1 million. With these savings, it would be possible to send Finnish patients to Tromsø by helicopter transport. In this case, the language difficulties would be overcome because Finnish-speaking health professionals would be available in Tromsø. For now, despite formal agreements (19), there is resistance to referring patients across national borders, which could potentially compromise the quality of patient care

and safety. The main reasons for this seem to derive from governmental regulations, language difficulties and cultural differences (10) (Vuori J, Faculty of Social Sciences and Business Studies, Department of Social and Health Management, University of Eastern Finland, Kuopio, Finland. Telephone interview with chief physician, Lapland Hospital District, Heta, Finland. 2010 November 15).

The extent to which health service density is based on topography and the challenges to road transport need to be studied more profoundly. Specifically, the far lower rate of utilization by Norwegian patients of either the Finnish or Swedish health care services should be explored in order to map the most efficient and effective network of services in these circumpolar areas. In Finland, the cost of driving long distances for citizens or society should be analysed as they create additional barriers to access. There is reason to believe that the Karasjok health care center could be a better option for Finns living, for instance, in Utsjoki, rather than sending them to the Central Hospital of Lapland or to the University Hospital of Northern Norway in Tromsø, which is a surprisingly long distance to travel (approximately 10 hours and over 600 km). There are policy and implementation implications of existing agreements for referrals across borders to ensure patient safety. There is value in reconceptualizing a map of the circumpolar regions based on access to health care and using this to reduce health care costs. Such an analysis needs to be done in relation to particular conditions as well as access to services in terms of time or distance to services. The distances between Finland and Sweden and Sweden and Norway have implications for both the cost-effectiveness and equality of access to services. This approach would form the basis for different policies and agreements to safeguard the health, well-being and safety of all residents in the circumpolar region, whatever their citizenship.

Needless to say, there are several limitations to our study. First, we could have analysed more specifically the needs of patients and what services they have used (out-patient care, laboratory services, X-ray facilities, etc.) as well as the financial obligations of referrals. Second, it is reasonable to believe that there are other cultural and managerial reasons why transportation between countries is so limited. In the future we may need to look more carefully at the historical documents and develop a greater understanding of the perspectives and experiences of patients and managers. Third, the comparison of the population base with circumpolar and urban areas would have provided a clearer understanding of what a reasonable density of service providers in rural areas could be. Fourth, the patients' claims about the treatment might have provided an explanation for referral patterns.

**Conclusion**

We analysed distances, drive-times and especially the number of referrals from Finnish health care centres to special care facilities to other Nordic circumpolar areas. We found that in some cases, the drive-time was more important than the distance, especially in Norway. Surprisingly, even in those cases where the distance was three times shorter to a Norwegian special care facility, there were only 6 out of 475 referrals to Norwegian special care services from Utsjoki. Our conclusions are as follows: First, the need for Finnish-speaking health professionals in Sweden and Norway

must be analysed more specifically, because for many years Swedish patients have used Finnish primary care servicers more than Finnish patients have used Swedish services. The reason for this imbalance is unclear, but it could be the scattered structure of health care services in Sweden, better Finnish services or issues of language. Second, because the Social Insurance Institution of Finland does not cover expenditure on travel to and from other Nordic countries or the costs of medicines, all the cost-benefits of such transportation options should be analysed in terms of accessibility and patient safety.

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