RESEARCH REPORT

Children's use of general practitioner services in the five Nordic countries

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Objective: To compare socioeconomic, sociodemographic, and living area differences in children's use of GP services in five Nordic countries from the 1980s to the 1990s and to analyse trends during the period.

Design: Cross sectional population surveys using random samples comprising 3000 children aged 2–17 years were conducted in 1984 and 1996 in five Nordic countries. Time trends in use of GP services were studied in each country by age, sex, parents' highest level of education, and living area.

Setting: Five Nordic countries, Denmark, Finland, Iceland, Norway, and Sweden in 1984 and 1996.

Participants: A total sample of 15 000 children aged 2–17 years. Altogether 3000 children were selected at random from the national population registers of the national bureaus of statistics in each country.

Main outcome: Health services utilisation on the basis of responses to a questionnaire item asking whether the parents had consulted a GP with regard to their children's health during the previous three months.

Main results: The prevalence of children's utilisation of GP services varied from 14% in 1984 in Sweden to 28% in 1996 in Iceland. A clear time trend towards increasing utilisation of GP services ($p < 0.05$) was found in all countries except in Denmark. Odds ratios for time trends (1984 = 1.00) varied from 1.22 (1.02 to 1.46) in Sweden to 1.92 (1.62 to 2.30) in Norway. After adjusting for independent variables, a statistically borderline significant declining utilisation trend (OR = 0.85 (0.70 to 1.03)) was found for Denmark.

Conclusion: Children's use of GP services has increased significantly in four of the five Nordic countries.

In the Nordic welfare states, health services are widely available and are predominantly financed by tax revenues. Analyses of the Nordic welfare states from the 1980s to the 1990s, including those conducted within a broader European context, suggest that despite having many country specific features, the Nordic countries have continuously shared enough social welfare characteristics to justify speaking of a Nordic model of the welfare state.^{1–2} Social policies in these countries are broadly similar. Health services are mostly free or subsidised for all, and they are publicly arranged and widely available.³ High quality services for children are also universal and available at low or no payment at the time of use, but the administration of these services varies slightly between the countries.⁴ Preventive services for children are also comprehensive in all Nordic countries and are attended by practically all children from birth until completion of mandatory school education.⁵

Although children are frequent users of health services, systematic information about their use of these services is sparse. Some studies have focused on differences between socioeconomic and sociodemographic groups in children's use of health care services.^{6–9} Some other previous comparative studies of children's health care utilisation have focused on socioeconomic factors in limited conditions only, on individual countries, at one point in time, or examined all Nordic countries as a group.^{9–12} However, we lack systematic studies on the sociodemographic and socioeconomic differences in children's use of health care services and in particular we lack trends over time and comparisons between the five Nordic countries.

The purpose of this study is therefore to compare socioeconomic, sociodemographic, and living area differences in children's use of GP services between Denmark, Finland, Iceland, Norway, and Sweden, and to look for trends in these differences over time from the 1980s to the 1990s.

METHODS

Data and methods

Our data come from two cross sectional population surveys undertaken in each of the five Nordic countries.¹³ The first survey was done in 1984 and the second in 1996.^{9–12–14} In both surveys, random samples comprising 3000 children aged 2–17 years in each country were drawn from the population register of the respective national bureaus of statistics. There were only few institutionalised children and they were excluded from our study.

The parent who was best familiar with the child's situation was instructed to fill in a mailed questionnaire with the recommendation that this should be done together with the child, if possible.¹³ Two reminders were sent. There were 10 219 completed questionnaires in 1984 and 10 317 in 1996. Response rates varied among the countries from 55.8% in 1984 to 79.5% in 1996, the mean response rate being 67% in 1984 and 70% in 1996. There were no differences between respondents and non-respondents as regards age and sex, but families with a low education, working class families, and single parent families were somewhat overrepresented among non-respondents in both years in all countries. Overall, the representativeness of the sample was high.¹³

In general, identical questions were used in all five countries in 1984 and 1996, with some new questions added in the second round.¹³ The 1984 questionnaire was prepared by a project group consisting of Nordic child health specialists. The final formulations were made at Statistics Sweden after a pilot study. The translations of the 1996 questionnaire from Swedish to Finnish, Danish, Norwegian, and Icelandic were made by a team of specialists in child health and linguistics. The questionnaire was piloted by up to standard samples ($n = 590$ in 1984) in all five countries with adequate response rates. The questionnaire included background questions about the child and their family, the health

Table 1 Utilisation of general practitioner services (%) during the past three months among children in the Nordic countries in 1984 and 1996 by age, sex, the family's highest education, and the living area

	Sweden		Iceland		Norway		Finland		Denmark	
	1984	1996	1984	1996	1984	1996	1984	1996	1984	1996
Age										
2–6 years	20*	25	29	29	19*	32	24*	33	22	24
7–12 years	10	12	17*	27	11*	20	18*	22	16	15
13–17 years	11	13	19*	28	12*	21	20	24	18	17
Sex										
Boys	14	15	20*	28	16*	24	20*	26	19	18
Girls	14*	18	24*	28	13*	24	21*	27	18	19
Education										
University/college	13	16	23*	27	12*	24	18*	26	23	21
Upper secondary	12	16	23*	28	12*	28	23	24	24	19
Lower secondary	16	19	21*	31	16*	23	21*	28	20	15
Primary school	13	13	23	24	16*	24	19*	29	14	17
Living area										
City	12*	17	20*	29	13*	24	16*	26	19	19
Town	14	16	24	26	11*	27	25	26	17	20
Rural area	15	16	24	27	18*	20	21	26	19	17
Total	14*	16	22*	28	14*	24	20*	26	19	19
	1729	2125	1377	1995	1617	1774	2690	1876	1983	2082

Significant differences in each category, $p < 0.05^*$ between years 1984 and 1996.

of the child, contacts with health care professionals, the child's activities together with and apart from the parents, socioeconomic information, and the parents' health and wellbeing.

The returned questionnaires were coded and deidentified. The data were transformed on SPSS and SAS data files. The final coding and correction of the material was carried out in the respective countries following common principles and rules agreed by the research group.

Dependent variable

Health service utilisation was measured by asking whether the child had visited or had been visited by a general practitioner (GP) during the previous three months. Health checks by the child health service and school health service were not included in this measure of health service utilisation.

Independent variables

The independent variables were age and sex, the highest level of parents' education, and living area. There were negligible

sex differences in the utilisation of health services. Accordingly, sex was adjusted for in the further logistic regression analyses. Age was classified into three groups: 2–6 years, 7–12 years and 13–17 years. Living area was divided into three groups according to the degree of urbanisation: (1) city (>100 000 inhabitants), (2) town (3000–100 000 inhabitants), and (3) rural area (<3000 inhabitants). The highest level of education achieved by either parent served as the indicator of socioeconomic status. Four levels were distinguished: (1) university/college level (>12 years), (2) upper secondary school (12 years), (3) Lower secondary school (10–11 years), and (4) primary school (<10 years).

Ethical considerations

The national ethics committees approved the study in each country. The parents and children were informed of the aims of the study in a letter accompanying the questionnaire. They were informed of their right to refuse to participate in the study and that the data processing and presentation would be anonymous.

Table 2A Utilisation of general practitioner services among children in Sweden in 1984 and 1996 by age, sex, the family's highest education, and the living area, presented as crude odds ratios (OR) and their 95% confidence intervals (CI)

	1984		1996	
	OR	95%CI	OR	95%CI
Sweden				
Age				
2–6 years	1.00		1.00	
7–12 years	0.46	0.34 to 0.64	0.39	0.30 to 0.52
13–17 years	0.50	0.36 to 0.71	0.45	0.33 to 0.60
Sex				
Boys	1.00		1.00	
Girls	0.99	0.75 to 1.30	1.30	1.03 to 1.64
Living area				
City	1.00		1.00	
Town	1.14	0.80 to 1.60	0.91	0.69 to 1.21
Rural area	1.28	0.90 to 1.80	0.92	0.68 to 1.23
Education				
University/college	1.00		1.00	
Upper secondary school	0.94	0.59 to 1.49	1.03	0.74 to 1.42
Lower secondary school	1.30	0.90 to 1.79	1.22	0.91 to 1.63
Primary school	1.00	0.69 to 1.46	0.77	0.50 to 1.16

Table 2B Utilisation of general practitioner services among children in Iceland in 1984 and 1996 by age, sex, the family's highest education, and the living area, presented as crude odds ratios (OR) and their 95% confidence intervals (CI)

	1984		1996	
	OR	95%CI	OR	95%CI
Iceland				
Age				
2–6 years	1.00		1.00	
7–12 years	0.49	0.37 to 0.66	0.87	0.69 to 1.10
13–17 years	0.59	0.42 to 0.84	0.94	0.74 to 1.21
Sex				
Boys	1.00		1.00	
Girls	1.29	1.00 to 1.67	1.02	0.84 to 1.24
Living area				
City	1.00		1.00	
Town	1.24	0.93 to 1.65	0.85	0.64 to 1.13
Rural area	1.21	0.85 to 1.72	0.92	0.73 to 1.15
Education				
University/college	1.00		1.00	
Upper secondary school	1.01	0.72 to 1.41	1.09	0.86 to 1.40
Lower secondary school	0.87	0.61 to 1.23	1.23	0.92 to 1.65
Primary school	1.01	0.63 to 1.61	0.87	0.60 to 1.27

Statistical analyses

The prevalence (%) of health care utilisation during the past three months among children in Denmark, Finland, Iceland, Norway, and Sweden in 1984 and 1996 by age, sex, the parents' level of education, and the living area was calculated first. Differences were tested by χ^2 test.

Secondly, logistic regression analysis was used to calculate unadjusted odds ratios (OR) and their 95% confidence intervals (CI) for the independent variables for all countries separately. Thirdly, unadjusted and mutually adjusted ORs for age, sex, living area, and the parents' level of education were calculated for children's use of GP services in all Nordic countries using the year 1984 as a reference (OR = 1.00).

RESULTS

Table 1 reports the prevalence of utilisation of GP services among children in Denmark, Finland, Iceland, Norway, and Sweden in 1984 and 1996 by age, sex, parents' level of education, and living area. The prevalence varied from 14% in Sweden in 1984 to 28% in Iceland in 1996. A clear time trend from 1984 to 1996 towards increasing utilisation of GP

services by children ($p < 0.05$) was found in all countries except in Denmark (table 1). This trend was especially strong and statistically significant for all sociodemographic and socioeconomic variables in Norway. A significant increase ($p < 0.05$) over time in the use of GP services in all the countries except Denmark was found for girls and in cities.

Unadjusted ORs for age, sex, parents' level of education, living area, and their 95% CIs for the utilisation of GP services among children in 1984 and 1996 for the five countries are presented separately in tables 2A–E. Mutual adjustment for all variables did not substantially affect the results. The utilisation was highest for the youngest age group (2–6 years) in all the countries. Girls' use of services was slightly higher than that of boys in Iceland in 1984 and in Sweden in 1996. In 1984, more services were utilised in rural areas and towns in Finland than in cities. In Denmark, children in families with lower education made less use of GP services than those in families with higher education.

When the differences in GP services utilisation from 1984 to 1996 were analysed by country, the ORs and their 95% CIs showed a clear increasing trend for all Nordic countries

Table 2C Utilisation of general practitioner services among children in Norway in 1984 and 1996 by age, sex, the family's highest education, and the living area, presented as crude odds ratios (OR) and their 95% confidence intervals (CI)

	1984		1996	
	OR	95%CI	OR	95%CI
Norway				
Age				
2–6 years	1.00		1.00	
7–12 years	0.53	0.38 to 0.74	0.53	0.40 to 0.69
13–17 years	0.60	0.42 to 0.84	0.57	0.43 to 0.76
Sex				
Boys	1.00		1.00	
Girls	0.81	0.61 to 1.07	0.98	0.79 to 1.23
Living area				
City	1.00		1.00	
Town	0.85	0.57 to 1.26	1.15	0.88 to 1.52
Rural area	1.45	1.00 to 2.08	0.81	0.60 to 1.11
Education				
University/college	1.00		1.00	
Upper secondary school	1.02	0.63 to 1.67	1.23	0.93 to 1.61
Lower secondary school	1.41	0.96 to 2.08	0.93	0.68 to 1.27
Primary school	1.42	0.96 to 2.10	0.96	0.64 to 1.43

Table 2D Utilisation of general practitioner services among children in Finland in 1984 and 1996 by age, sex, the family's highest education, and the living area, presented as crude odds ratios (OR) and their 95% confidence intervals (CI)

	1984		1996	
	OR	95%CI	OR	95%CI
Finland				
Age				
2-6 years	1.00		1.00	
7-12 years	0.69	0.55 to 0.87	0.57	0.44 to 0.73
13-17 years	0.81	0.64 to 1.01	0.64	0.49 to 0.83
Sex				
Boys	1.00		1.00	
Girls	1.01	0.84 to 1.22	1.06	0.86 to 1.30
Living area				
City	1.00		1.00	
Town	1.73	1.37 to 2.19	0.98	0.76 to 1.28
Rural area	1.41	1.11 to 1.78	0.96	0.72 to 1.27
Education				
University/college	1.00		1.00	
Upper secondary school	1.38	1.01 to 1.89	0.92	0.68 to 1.24
Lower secondary school	1.21	0.87 to 1.68	1.11	0.80 to 1.54
Primary school	1.09	0.80 to 1.50	1.13	0.79 to 1.61

except Denmark (table 3). The ORs for changes over time (1984 = 1.00) varied from 1.22 (1.02 to 1.46) in Sweden to 1.92 (1.62 to 2.30) in Norway. After adjusting for age, sex, living area, and parents' level of education, a statistically borderline significant declining tendency in the utilisation (OR = 0.85 (0.70 to 1.03)) was seen for Denmark in contrast with the other four Nordic countries.

DISCUSSION

This comprehensive and representative population data offers a unique opportunity to analyse time trends in children's use of GP services in the comparatively homogenous Nordic welfare states. The main finding was an increase in the use of GP services for children from 1984 to 1996 in all Nordic countries except Denmark. However, as we know of no other similar studies, additional research is necessary to confirm these findings.

Possible explanations for the clear time trend are increased disease prevalence and larger numbers of long term patients.¹⁵⁻¹⁷ For instance, the incidence of childhood type 1 diabetes mellitus has risen, as have diagnoses of childhood

asthma.¹²⁻¹⁶ Changes in direct costs to patients and the reorganisation of health care services may also have contributed to the increase in use of GP services by children in these Nordic countries.¹⁸ However, when disease prevalence was followed up in the general population during a 15 year period from the 1980s to 1990s in Denmark, Finland, Norway, and Sweden, no major changes were seen despite the severe economic recession at the beginning of the 1990s.¹⁷⁻¹⁹ An additional explanation might be changes in the health care policy or priorities.⁴

Although the Nordic countries share a welfare state model that includes universal benefits and free or heavily subsidised services, each has many specific features. In Norway, for example, the time trend was obvious for all the variables included in this study, while an opposite finding was seen in Denmark. The Danish health care system differs from the other Nordic countries, for example, with respect to provider policy, which might partly explain this finding.^{3-4, 20} In Finland, the health care system was highly centralised before the state subsidy reform in 1993. However, rapid general economic growth since the mid-1990s and an increase in the

Table 2E Utilisation of general practitioner services among children in Denmark in 1984 and 1996 by age, sex, the family's highest education, and the living area, presented as crude odds ratios (OR) and their 95% confidence intervals (CI)

	1984		1996	
	OR	95%CI	OR	95%CI
Denmark				
Age				
2-6 years	1.00		1.00	
7-12 years	0.68	0.52 to 0.89	0.54	0.41 to 0.70
13-17 years	0.75	0.56 to 1.00	0.63	0.48 to 0.82
Sex				
Boys	1.00		1.00	
Girls	0.98	0.78 to 1.23	1.05	0.84 to 1.31
Living area				
City	1.00		1.00	
Town	0.88	0.66 to 1.17	1.11	0.83 to 1.48
Rural area	1.00	0.76 to 1.31	0.93	0.69 to 1.25
Education				
University/college	1.00		1.00	
Upper secondary school	1.01	0.64 to 1.58	0.90	0.67 to 1.19
Lower secondary school	0.80	0.57 to 1.11	0.68	0.49 to 0.93
Primary school	0.54	0.38 to 0.78	0.75	0.42 to 1.33

Table 3 Differences in utilisation of general practitioner services among children in 1984 and 1996 by country. Odds ratios (OR) and their 95% confidence intervals (CI) unadjusted and adjusted for age, sex, living area, and the family's highest education. The year 1984 as reference = 1

	Unadjusted		Adjusted	
	OR	95% CI	OR	95% CI
Sweden 1984	1.00		1.00	
Sweden 1996	1.22	1.02 to 1.46	1.24	1.03 to 1.49
Iceland 1984	1.00		1.00	
Iceland 1996	1.35	1.15 to 1.58	1.37	1.16 to 1.62
Norway 1984	1.00		1.00	
Norway 1996	1.92	1.62 to 2.30	2.03	1.67 to 2.47
Finland 1984	1.00		1.00	
Finland 1996	1.38	1.20 to 1.58	1.38	1.19 to 1.60
Denmark 1984	1.00		1.00	
Denmark 1996	1.00	0.85 to 1.17	0.85	0.70 to 1.03

level of education have contributed to the increase in use of health care services there.²¹

Sweden's health care system underwent significant structural changes during the 1990s. Sweden's general economic framework remained largely unchanged, but patients must now pay for a larger portion of the health care services. During the 1970s and 1980s access to care was nearly equal irrespective of profession, income, and education. However, data from self reports of illness show that utilisation in primary care during the 1990s dropped for low income groups compared with high income groups.¹⁸ Our finding of the lowest use of GP services by children in 1996 might be explained by higher patient charges and/or an increase in the use of private services in Sweden compared with those in other Nordic countries. After the reported increase in the use of private medical services for ambulatory patients in the early 1990s, the distribution of the visits between the public and private healthcare sectors remained stable during the latter part of the 1990s.²² A very recent study has signalled a possible downward trend in the use of public primary care services for children aged 0–17 years in a highly populated Swedish county.²³

In all countries, the utilisation of GP services was highest for the youngest age group, and in Iceland and Sweden girls used them more frequently than boys. Potential explanations for these findings might include higher parental awareness, and recent increases in chronic disease and psychosomatic complaints.¹³ Our finding that in Finland during the 1980s

more GP services were used by children in rural areas and smaller towns (where private GP services were rather rare) needs to be seen in the light of reports of a higher use of private services in larger urban areas.²¹ It has been found that parents from lower socioeconomic groups use the telephone less frequently to secure GP and specialists services than parents from higher socioeconomic groups.⁹ This probably explains the finding that less educated Danish families use GP services more frequently. In addition, during the 1990s it became more difficult to obtain GP services at home in Denmark by making a telephone call.²⁰

Our study has several strengths. One important advantage is that the surveys from the two periods were collected using identical questionnaires and methods, thus providing us with highly comparable data from the five Nordic countries. The fact that families with low education as well as working class and one parent families were somewhat overrepresented among the non-respondents in both years had no significant effect on results.^{12–13} On the other hand, the coverage of our data on health care use was limited to GP services, and inclusion of additional health care sectors would have given a more comprehensive picture on the full range of available health services. This limitation may have been partially compensated for by the fact that GP services are usually the primary and most common means for providing health care to children, and their availability is often prioritised politically as well. The scope of our analysis was somewhat limited because of the lack of additional variables, such as those related to income or occupation. The data used here were obtained during the 1980s and 1990s, and updated follow up data from the subsequent decade will be necessary before we can judge whether the trends found here have continued or not.

Our findings shed light on the increasingly important use of health care services and warrant additional follow up studies of the use of various health care services during the following 10 year period now coming to a close.²⁴ The reasons for the increase in use of GP services for children should be analysed in detail to plan for the development of the Nordic model of the welfare state.

What this paper adds

Although children are frequent users of health services, we lack systematic studies on the sociodemographic and socioeconomic differences in children's health care utilisation. In particular we lack international comparisons and trends over time. We compared the use of GP services in the five Nordic countries at two points of time. The prevalence of children's contact with a GP during the past three months varied from 14% to 22% in 1984 and from 16% to 28% in 1996. A clear time trend towards increasing utilisation of GP services was found in all Nordic countries except Denmark. The reasons for this increase probably relate to increasing prevalence of some diseases, such as asthma and diabetes, as well as the changing patterns of health care provision. Detailed analyses are needed to be able to develop health services within the Nordic model of the welfare state.

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