Service profiles of general practitioners in Europe

W G W BOERMA

J VAN DER ZEE

D M FLEMING

With the national coordinators of the European GP Task Profile Study

SUMMARY

Background. *General practice is the focal point of primary care. There are national differences in the structure and organization of practice, the relationship with secondary care is being redefined, and in some countries major changes are taking place.*

Aim. *To describe and examine differences in the service profiles of general practitioners (GPs) in European countries.*

Method. *Standardized questionnaires in the national languages were sent to samples of GPs in 1993. Four areas of service provision were measured: the GP's position in the first contact with selected health problems, the involvement in minor surgery and the application of medical procedures, disease management and preventive care. The importance of the gatekeeping role, remuneration system, and geographical region in Europe was examined by comparing scores in appropriate national groupings.*

Results. *Data were received from 7233 GPs in 30 countries. Most national samples were random and the average response rate was 47%. In countries where GPs have a gatekeeping role, they had a relatively stronger position as doctors of first contact. In those countries where GPs were usually self-employed, they had a stronger role in disease management and screening for blood cholesterol. In the examination of the three structural elements of health care, the most striking differences were evident in the comparison between eastern and western Europe. GPs throughout Europe had a comparatively small role in organized health education.*

Conclusion. *The position of GPs is weak in eastern Europe and some Mediterranean countries, where service profiles have a limited range. General practice was more comprehensive where the doctors had a gatekeeping role.*

Keywords: general practice; international comparison; service profiles.

Introduction

VARIATION in medical practice and health care utilization is well known. Studies on hospital admissions and surgical procedures have pointed to supply factors, such as the density of medical specialists, as determinants of national and regional differences.[1-5]

In countries where access to health care is controlled by GPs,

W G W Boerma, MSc, senior research fellow; and J van der Zee, PhD, director, NIVEL Institute, Utrecht, The Netherlands. D M Fleming, FRCGP, PhD, director, RCGP Birmingham Research Unit, Birmingham, UK.

there is some evidence of better health levels and lower costs.[6] Although obvious demographic variables explain some of the variation, much is unexplained, perhaps because of '...a broad zone of uncertainty in which optimal treatment and the limits of efficacy have not been scientifically established'.[7]

There have been a number of international comparative studies in primary care. Mechanic[8] showed different types of practice in the United States (US) and Great Britain. Hull's[9] accounts of practice visits showed national differences in the workload and tasks of GPs. Grol *et al*[10] examined referral behaviour in Belgium, the Netherlands, and the United Kingdom (UK), and found significant differences in the GPs' attitudes towards taking risks. The method of remunerating GPs, affects the range of services offered.[11-13] Crombie *et al*[14] conducted an enquiry among GPs in 15 European countries using a structured interview, and concluded that the gatekeeper role and the system of remuneration influenced the tasks undertaken. Fleming[15] reported on 44 000 referrals by 1500 doctors in 15 European countries. Referral patterns were associated with the density and the remuneration of both GPs and specialists, the mode of access to secondary care, and the traditional vocational training scheme for general practice.

This study concerns the range of services offered by GPs in European countries and their relationship to health care systems.

Method

The study was based on a questionnaire completed by samples of GPs in each of 30 countries of Europe. The questionnaire was designed to highlight particular aspects of service provision, access to health care, and the comprehensiveness and continuity of GP services.[16,17] It included GPs' activity

● as the doctor of first contact in health-related matters
● in minor surgical and investigative procedures
● in the management and follow up of a broad range of acute and chronic diseases
● in preventive medicine.

In each of these four areas, a series of health problems was presented and GPs were asked to describe their involvement on a precoded scale. For example, 'first contact' was measured on a four-point scale ranging from 'almost always' to 'never' in 27 health problems (e.g. child aged eight years with a hearing problem; woman aged 50 years with a breast lump). The questionnaire was drafted from a variety of sources, including the problem questionnaire used in the Interface Study[14] and instruments used in the Dutch National Survey of General Practice.[18]

The study was undertaken simultaneously in all countries. It was coordinated and analysed at the NIVEL Institute (Netherlands Institute of Primary Health Care), supported by the European Regional Office of the World Health Organization and funded by the European Commission in the BIOMED 1 programme. National coordinators in the countries of the WHO European Region (includes Turkey and Israel) were responsible for refining the questionnaire, organizing its translation, implementing the survey, and reviewing the results. Translations provided by national coordinators were checked by licensed transla-

tors. Answers were, in general, precoded. The drawing of the samples and the circulation of questionnaires was usually carried out at national level.

No data were available on the expected distribution of study variables, hence power analysis could not be made. To allow for sufficient numbers of respondents in areas with different levels of urbanization, a response target of 200 GPs was set for all countries, excepting Iceland and Luxembourg, where there are few GPs. Sampling in each country was influenced by the expected response rate. In some countries, GPs were sampled at random, whereas in others the sampling procedure was adapted to improve recruitment. In central and eastern European countries without GPs, district doctors or general therapists were recruited instead; in some countries, health centres were sampled. Finally, in a few countries, doctors were recruited by personal contact or advertisement.

Respondents in each country were examined by available parameters to assess representativeness. The answers to individual questions provided on a four-point scale were coded numerically. Each of the four service areas was considered separately and only those respondents answering 75% of the questions were included in the analysis of each section.

The first area concerned the role of the GP in the first contact with health care. The data were analysed to provide an average of the results for answered questions. The distribution of the answers to each question was examined and, where extreme skewness was evident (85% or more positive or negative answers), these questions were excluded from the averaging procedure. This resulted in a total scale reliability given by Cronbach's alpha = 0.94. Then, by principal components analysis,[19] four subscales were identified (health problems with children, women's health problems, psychosocial problems, and acute health problems) with reliability coefficients of 0.91, 0.87, 0.90, and 0.86 respectively.

The second area concerned the application of medical techniques. Fourteen procedures were used. For this set of data, Cronbach's alpha was 0.89 and no subscales were identified.

The third area concerned management of disease, which included diagnosis, treatment, and follow up. This was measured in 17 sample cases. Using the scale procedure, Cronbach's alpha was 0.88 and no subscales were identified.

The fourth area concerned preventive medicine and health education. This was measured in an analysis of involvement in screening for hypertension, raised cholesterol, and cervical cancer by cytology. GPs were asked whether they routinely screened for hypertension when adults consulted regardless of the reason and whether they organized special clinics to which people were invited. Those answering 'yes' were totalled and expressed as a percentage of the national sample. The questions concerning blood cholesterol and cervical cancer were posed similarly. Further questions were asked in relation to the immunization of children and paediatric surveillance. Involvement in these areas could be represented by an individual score of 0, 1 or 2, which was averaged to provide a national score. Involvement in health education was measured when special sessions were provided to deal with diet, tobacco smoking, and alcohol consumption.

National results obtained in each of the four areas of activity were considered in relation to three characteristics of health care systems[14,15]

● the gatekeeper role of GPs
● the predominant employment status of GPs (self-employed or salaried)
● location within Europe.[20-22]

Mean scores for each parameter were derived and differences were analysed bivariately as well as after standardization for the effect of the other two variables.

Results

In 17 countries, 50% or more of the GPs sampled completed the questionnaire (Table 1). A random sampling procedure was used in most countries. Our initial target of 200 respondents (excluding Iceland and Luxembourg) was not achieved in nine countries. Representativeness of the respondents by age and gender was examined by comparison with national data in 21 of the countries, and has been reported elsewhere.[23] In brief, there were small under-representations of women and of the youngest and oldest age groups. Differences in mean age and proportions of women between the samples and the national populations are given in Table 1. In three quarters of the countries, the mean age of respondents was within two years of the national mean and the proportion of women was within 5%.

First contact with health care

The GP's position in the first contact is presented in Table 2. The seven countries with the highest scores (3.20 and over) were all from western Europe. Lowest scores (2.39 or less) were found in the former communist countries of central and eastern Europe and in Turkey, although some of these, Croatia, Hungary, and Slovenia, had average scores or higher. Comparison of the four subscales (not in Table 1) showed that the first contact position was generally strongest for 'acute' problems. In countries with markedly differing scores for the health problems of children and women, the GP was more often doctor of first contact for children. Scores for first contact with psychosocial problems were highest in Denmark, the Netherlands, and the UK.

Medical technical procedures

Application of medical techniques (second column, Table 2) were scored highest (2.80 or more) in the Scandinavian countries, the Netherlands, Switzerland, and the UK. The countries in central and eastern Europe and Italy had low scores.

Disease management

Results for the treatment and follow-up of diseases (third column, Table 2) are less variable than for the previous two parameters, ranging from 3.06 in the UK and 3.03 in Norway to 1.65 in Turkey and 2.20 in Bulgaria. Scores were, in general, higher in the west than in the east. Predominantly German-speaking countries and France had relatively high scores. Scores were comparatively low in Spain (2.43), the Netherlands (2.44), and Finland (2.46).

Preventive care

Results for prevention are summarized in Table 3. For each of three case-finding procedures, we examined the proportion of GPs reporting routine involvement. The proportions involved in the seven countries with the highest and the seven countries with the lowest values are given. Table 3 also gives the score (range 0–2) for involvement in routine childhood surveillance and immunization and information on involvement in health education about smoking, alcohol use, and diet (range 0–3). The UK was in the highest quartile for the five analyses considered, and Portugal for four of them. Croatia, the Czech Republic, and Turkey were in the lowest quartile for three of the analyses. There was considerable national variation in the reported provision of the preventive services. In most countries, GPs were involved in screening for hypertension. This was not the case for

Table 1. Response rates, sampling procedures and representativeness on age and sex per country.

Country	Forms returned	Response rate (%)	Sampling procedure*	Age difference P–R‡ (years)	Gender difference P–R‡ (%)
Austria	301	50	B	3.0	10
Belgium	518	28	D	1.3	6
Bulgaria	242	84	C	NA	NA
Croatia	202	59	C	2.3	1
Czech Republic†	132	51	C	1.0	−5
Denmark	196	56	B	1.0	4
Estonia	165	70	B	NA	NA
Finland	239	42	B	−1.5	2
France	235	NA	E	−0.5	9
Germany	169	44	D	−3.3	13
Greece	179	33	B	NA	NA
Hungary	162	36	B	NA	NA
Iceland	52	37	A	NA	NA
Ireland	130	65	B	0.8	4
Israel	673	78	B	NA	NA
Italy	345	51	D	−5.6	9
Latvia	227	45	C	NA	NA
Lithuania†	333	87	C	−0.1	2
Luxembourg	54	30	A	1.9	7
Netherlands	210	53	B	−0.2	−4
Norway	164	52	B	−0.8	1
Poland	277	46	C	−1.6	0
Portugal	151	38	B	0	0
Romania	232	52	C	NA	NA
Slovenia	162	65	D	−1.7	−2
Spain†	574	42	B	−0.9	5
Sweden	209	52	B	−0.9	1
Switzerland	200	50	B	−0.8	1
Turkey	199	50	C	NA	NA
United Kingdom	301	30	B	−1.3	2
Total	7233	47			

*Codes for sampling procedure: A, (almost) entire GP population; B, random national sample (stratified or not); C, random sample in pre-selected regions; D, mixed procedure (some random procedure plus selected GPs); E, 'opportunity sampling'/volunteers (response rate not applicable, NA). †Additional samples of (district) paediatricians not included. ‡Population minus response (NA, not available).

blood cholesterol or for cervical cancer, where involvement was often less than 30%. Involvement in group health education was extremely low.

The gatekeeper role (Table 4)

National differences were examined first in relation to the role of GPs as gatekeepers. In 12 countries (Croatia, Denmark, Iceland, Ireland, Israel, Italy, the Netherlands, Norway, Portugal, Slovenia, Spain, and the UK), referrals to specialists are largely controlled by GPs. The mean score in these countries for first contact with health problems was 3.26, which exceeds the score in the other countries. Differences in the application of medical techniques and the management of disease were not significant. The only other difference was in cervical cancer screening, but this was not significant allowing for the other variables (employment status and European region).

GP employment status (Table 5)

In 12 countries, the GPs are largely self-employed (Austria, Belgium, Denmark, France, Germany, Ireland, Italy, Luxembourg, Norway, the Netherlands, Switzerland, and the UK), and they have greater involvement as doctor of first contact, in applying medical techniques, and in the treatment of disease. However, after standardization for the gatekeeping role and the region of Europe, the difference is only significant for dis-

ease management. In preventive services, self-employed doctors had greater involvement in cervical cancer screening and paediatric preventive care, although the differences were not significant after standardization for both the other variables.

Analysis by European region (Table 6)

For this analysis, the countries of central and eastern Europe included Bulgaria, Croatia, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovenia, and Turkey. By comparison with these countries, GPs in western Europe reported significantly greater involvement as doctors of first contact, in the application of medical techniques, in screening for blood cholesterol and in paediatric prevention (both before and after standardization for the other variables), and in disease management and cervical screening (before standardization).

Discussion

The main results of this study can be summarized as follows:

● In those countries where GPs exercise a gatekeeping function, they have a significantly stronger position as doctor of first contact.

● Where GPs are self-employed, they have greater involvement in disease management than in countries where they

Table 2. GPs' involvement in curative and preventive services per country.

Country	A* score	B* score	C* score	D (%)	E (%)	F (%)	G† score
Austria	2.95	2.11	2.88	87.4	61.1	27.6	1.80
Belgium	3.01	2.49	2.78	91.8	38.7	71.0	1.56
Bulgaria	1.74	1.12	2.20	80.6	31.8	29.8	0.78
Croatia	3.14	1.77	2.81	65.0	25.6	4.4	0.80
Czech Republic	2.28	1.66	2.39	88.9	37.8	0.0	0.09
Denmark	3.49	2.82	2.88	70.7	28.8	99.0	1.95
Estonia	2.06	1.29	2.55	87.9	21.8	24.8	1.13
Finland	3.00	3.46	2.46	53.6	44.4	74.9	1.35
France	3.08	2.01	2.99	99.2	26.7	75.4	1.95
Germany	2.82	2.22	3.02	91.1	79.2	35.1	1.59
Greece	2.47	1.99	2.59	68.2	39.7	24.6	1.30
Hungary	2.75	1.38	2.81	90.7	29.6	1.9	0.64
Iceland	3.10	3.19	2.78	59.6	32.7	69.2	1.98
Ireland	3.48	2.49	2.96	86.9	44.6	67.7	1.71
Israel	3.06	1.70	2.65	86.6	73.4	33.4	1.03
Italy	3.08	1.44	2.61	82.9	53.6	76.8	0.58
Latvia	1.96	1.58	2.57	92.0	24.3	78.3	0.60
Lithuania	1.71	1.10	2.40	90.6	39.4	‡	0.36
Luxembourg	2.63	2.16	2.68	92.6	25.9	31.5	1.69
Netherlands	3.67	3.10	2.44	36.8	14.4	99.0	0.83
Norway	3.28	3.05	3.03	46.3	31.3	80.5	0.81
Poland	2.27	1.34	2.56	91.6	35.3	29.8	1.51
Portugal	3.22	1.74	2.71	94.0	28.5	90.1	1.90
Romania	2.36	1.80	2.34	68.4	14.7	35.9	1.10
Slovenia	2.87	1.99	2.41	71.0	35.8	4.9	0.74
Spain	3.20	1.77	2.43	86.1	79.5	18.7	0.98
Sweden	2.83	2.83	2.75	40.2	32.5	34.4	1.82
Switzerland	2.88	2.94	2.94	89.9	51.5	67.7	1.74
Turkey	2.02	1.73	1.65	55.3	8.5	7.0	1.39
UK	3.51	2.83	3.06	92.9	57.6	98.0	1.74
Total	2.80	2.10	2.64	78.0	38.3	48.0	1.25

A, the first contact with health problems; B, involvement in the application of medical techniques; C, disease management; D, routinely assessing blood pressure; E, routinely assessing blood cholesterol levels; F, routinely taking cervical smears; G, preventive services for children (surveillance and immunization). *Possible scores range from 1 to 4. †Possible scores range from 0 to 2. ‡, not available.

Table 3. The involvement of GPs in five measures of preventive care.

Service	Mean	Seven highest (H) and lowest (L) national values	
Hypertension screening	78%	H	France (99), Portugal (94), Luxembourg (93), UK (93), Belgium (92), Latvia (92), Poland (92),
		L	Netherlands (37), Sweden (40), Norway (46), Finland (54), Turkey (55), Iceland (60), Croatia (65)
Cholesterol screening	38%	H	Spain (80), Germany (79), Israel (73), Austria (61), UK (58), Italy (54), Switzerland (52)
		L	Turkey (9), Netherlands (14), Romania (15), Estonia (22), Latvia (24), Croatia (26), Luxembourg (26)
Cervical cancer screening	48%	H	Denmark (99), Netherlands (99), UK (98), Portugal (90), Norway (81), Latvia (78), Italy (77)
		L	Czech Republic (0), Hungary (2), Croatia (4), Slovenia (5), Turkey (7), Spain (19), Greece (25)
Immunization/surveillance*	1.3	H	Iceland (2.0), Denmark (1.9), France (1.9), Portugal (1.9), Austria (1.8), Sweden (1.8), Switzerland (1.7), UK (1.7)
		L	Czech Republic (0.1), Lithuania (0.4), Italy (0.6), Hungary (0.6), Latvia (0.6), Slovenia (0.7), Bulgaria (0.8)
Health education†	0.33	H	Portugal (1.1), Romania (0.9), UK (0.7), Germany (0.6), Hungary (0.6), Bulgaria (0.5), Norway (0.5)
		L	Czech Republic (0.1), Latvia (0.1), Luxembourg (0.1), Belgium (0.1), Denmark (0.1), Italy (0.2) Spain (0.2)

*Possible scores range from 0 to 2. †Possible scores range from 0 to 3.

are employees.
- GPs in the countries of western Europe have a much stronger role in first contact, the application of medical techniques, screening for blood cholesterol and paediatric prevention than those in the east.
- Individual national profiles of GPs' tasks are disclosed, and these are self-evident from the results.

In discussing these results, we will consider their validity, the international differences disclosed and, finally, relate them to the future development of primary care in Europe.

Validity

A random sampling procedure was achieved in most countries. The response rate averaged 47% and, although this indicates selection bias, we are considerably encouraged by this response. The nature of the questionnaire was not such that the selective response might introduce significant bias, although the possibility cannot be ignored. The target of 200 GPs in each country was not always achieved, but we believe it unlikely that the results are unrepresentative of the national positions.

Considerable care was taken with the translation of the questionnaire into the 26 languages used, and it is unlikely that national versions were inaccurate. Nevertheless, some connotative loss is possible and some words (such as 'routine' or 'usual') could be interpreted differently.

National differences

The national picture disclosed within this study describes the position as seen by GPs. Low rates for GP involvement do not indicate national apathy. Rather, there must be alternative methods of provision, although these were not studied.

Some of the national differences perhaps relate to the way in which primary care has evolved. Primary care is strong in Scandinavia, the Netherlands, and the UK, and this was evident in the analyses relating to first contact, medical technical procedures and, although to a lesser extent, in disease management. Both the UK and Portugal disclosed strong results for preventive services. Health care systems involving patient registration with a specific doctor could be used for defining responsibility for

Table 4. National scores on GP involvement in services, analysed by the GP gatekeeper role.†

Category of activity	GP gatekeeper (n = 12)	GP non-gatekeeper (n = 18)	Level of significance‡
First contact	3.26 (3.15)	2.49 (2.57)	** (**)
Medical techniques	2.32 (2.15)	1.96 (2.07)	NS (NS)
Disease management	2.73 (2.67)	2.59 (2.62)	NS (NS)
Preventive services			
Blood pressure	0.73 (0.74)	0.81 (0.81)	NS (NS)
Blood cholesterol	0.42 (0.39)	0.36 (0.38)	NS (NS)
Cervical screening	0.62 (0.56)	0.38 (0.42)	* (NS)
Child immunization/surveillance	1.26 (1.11)	1.24 (1.34)	NS (NS)

†In brackets: the independent effects standardized for three national variables: 'gatekeeping', 'employment status' and 'east–west' (ANOVA proce-

Table 5. National scores on GP involvement in services, analysed by the GP employment status.†

Category of activity	GP gatekeeper (n = 12)	GP non-gatekeeper (n = 18)	Level of significance‡
First contact	3.16 (2.93)	2.57 (2.71)	** (NS)
Medical techniques	2.47 (2.16)	1.86 (2.06)	** (NS)
Disease management	2.86 (2.78)	2.50 (2.55)	** (*)
Preventive services			
Blood pressure	0.81 (0.84)	0.76 (0.74)	NS (NS)
Blood cholesterol	0.43 (0.36)	0.35 (0.40)	NS (NS)
Cervical screening	0.69 (0.60)	0.33 (0.39)	** (NS)
Child immunization/surveillance	1.50 (1.25)	1.08 (1.25)	* (NS)

†In brackets: the independent effects standardized for three national variables: 'gatekeeping', 'employment status' and 'east–west' (ANOVA procedure). ‡*P < 0.05; **P < 0.01.

Table 6. National scores on GP involvement in services, analysed by European region.†

Category of activity	'West' (n = 19)	'East' (n = 11)	Level of significance‡
First contact	3.09 (2.97)	2.29 (2.50)	** (**)
Medical techniques	2.44 (2.40)	1.52 (1.57)	** (**)
Disease management	2.77 (2.71)	2.43 (2.53)	** (NS)
Preventive services			
Blood pressure	0.77 (0.75)	0.80 (0.83)	NS (NS)
Blood cholesterol	0.44 (0.45)	0.28 (0.26)	* (*)
Cervical screening	0.62 (0.56)	0.22 (0.33)	** (NS)
Child immunization/surveillance	1.49 (1.52)	0.83 (0.78)	** (**)

†In brackets: the independent effects standardized for three national variables: 'gatekeeping', 'employment status' and 'east–west' (ANOVA procedure). ‡*P < 0.05; **P < 0.01.

preventive care.

The concept of comprehensive and family care is included in the usual definitions of general practice but, in some countries, separate provision is made for gynaecology and paediatrics. In Spain, GPs were not involved in screening for cervical cancer; in Italy, they were not involved in paediatric prevention. These differing features of primary care will inevitably have some influence on the results of this study and their interpretation. Patient registration with a defined practice favours the involvement of GPs in a wide range of medical services, and reduces 'shopping' for practitioners with special expertise. It was a surprise, therefore, to find relatively low scores for disease management in the Netherlands and in Finland, where the position of GPs in first contact is strong. It may be that some privately insured persons in these two coun-

tries use specialist services, for disease management.

Development of primary care

This study identifies effective primary care in association with certain types of health care structure. It provides guidance for national authorities in the process of developing programmes of primary care. The gatekeeper role is obviously associated with the function of doctor of first contact. Less obviously, it implies a powerful means of controlling health care costs,[6] although this depends on the provision of a service with continuous responsibility at all times.

Self-employment was associated with greater involvement in some activities. This independence may encourage doctors to develop services in addition to those basic to general practice. Opportunities to experiment with new services helps to identify

those most suitable for provision in primary care.

Finally, this study has outlined briefly the different national positions of general practice in Europe in 1993 (a fuller account in book form is expected shortly). The organization of primary health care is changing in many countries and patient choice is receiving greater attention in eastern Europe.[20,22] It will be interesting to examine the impact of these developments in a few years' time.

References

1. Vayda E. A comparison of surgical rates in Canada and in England and Wales. *N Engl J Med* 1973; **289:** 1224-1229.
2. Kohn R, White KL. *Health care: an international study.* Oxford: Oxford University Press, 1976.
3. McPherson K, Wennberg JE, Hovind OB, Clifford P. Small-area variations in the use of common surgical procedures: an international comparison of New England, England and Norway. *N Engl J Med* 1982; **307:** 1310-1314.
4. Van der Zee J, Groenewegen PP, Gloerich ABM, *et al.* Determinants of regional variations in hospital admission rates: the case of the Low Countries and the north of France. *Int J Health Sci* 1990; **1:** 257-270.
5. McPherson K. International differences in medical care practices. In: *Organization for economic co-operation and development. Health care systems in transition.* OECD Social Policy Studies No. 7. Paris: OECD, 1990.
6. Starfield B. Is primary care essential? *Lancet* 1994; **344:** 1129-1133.
7. Evans RG. *Strained mercy: the economics of Canadian health care.* Toronto: Butterworth, 1984.
8. Mechanic D. General medical practice: some comparisons between the work of primary care physicians in the United States and England and Wales. *Med Care* 1972; **X:** 402-420.
9. Hull FM. *A day with the doctor.* Update 1978–1982; Vols 17-24 (long series of country reports).
10. Grol R, De Maeseneer J, Whitfield M, Mokkink M. Disease-centered versus patient-centered attitudes: comparison of general practitioners in Belgium, Britain and the Netherlands. *Fam Pract* 1990; **7:** 100-103.
11. Groenewegen PP, Van der Zee J, Van Haaften R. *Remunerating general practitioners in western Europe.* Aldershot: Avebury, 1991.
12. Delnoy DMJ. *Physician payment systems and cost control.* Utrecht: NIVEL, 1994.
13. Sandier S. Health services utilization and physician income trends. *Health Care Fin Rev* 1989; Annual Suppl**.:** 33-48.
14. Crombie DL, Van der Zee J, Backer P. *The interface study.* [Occasional Paper 48.] London: Royal College of General Practitioners, 1990.
15. Fleming DM. *The European study of referrals from primary to secondary care.* Amsterdam: Thesis Publishers, 1993.
16. McWhinney IR. *A textbook of family medicine.* New York: Oxford University Press, 1989.
17. WONCA. *The role of the general practitioner/family physician in health care systems: A statement from the World Organization of National Colleges, Academies and Academic Associations of General Practitioners/Family Physicians.* Victoria: WONCA, 1991.
18. Foets M, Van der Velden J, De Bakker J. *Dutch national survey of general practice: a summary of the survey design.* Utrecht: NIVEL, 1992.
19. SPSS Inc. *SPSS user's guide,* 2nd edn. Chicago: SPSS, 1986.
20. McKee M. Health services in central and eastern Europe: past problems and future prospects. *J Epidemiol Commun Health* 1991; **45:** 260-265.
21. Boerma WGW, De Jong FAJM, Mulder P. *Health care and general practice across Europe.* Utrecht: NIVEL/NHG, 1993.
22. Evans PR. The changing scene in general practice in Europe. *BMJ* 1994; **308:** 645-648.
23. Boerma WGW. *European GP task profile study: Backgrounds on sampling and response.* Utrecht: NIVEL, 1997 (in preparation).

Acknowledgements

Address for correspondence

W G W Boerma, NIVEL, Netherlands Institute of Primary Health Care, PO Box 1568, 3500 BN Utrecht, The Netherlands.