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DOI	

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This study was made possible by funding from the European Union in the BIOMED1 program (contract BMH1-CT92-1636).

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Received May 12, 1999; initial review completed August 5, 1999; accepted June 1, 2000.

# Gender-Related Differences in the Organization and Provision of Services Among General Practitioners in Europe

A SIGNAL TO HEALTH CARE PLANNERS

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**BACKGROUND.** The number of women entering general practice is rising in many countries. Thus, gender differences in work situation preferences and practice activities are important for future planning.

**OBJECTIVES.** This article describes the differences between male and female general practitioners (GPs) in 32 European countries. It examines gender differences in curative and preventive services and relates these to features of the health care system and the practice.

**METHODS** The data were collected in 1993 and 1994 in the European Study of Task Profiles of General Practitioners. In 32 countries, 8,183 GPs answered standardized questionnaires written in their own languages on their selfreported involvement in curative and preventive services, as well as how their practice was organized and managed. Because the independent variables in this study were on both the national and individual practice levels, the data were subjected to multilevel analysis.

**RESULTS.** Regardless of the type of health care system, the female GPs were younger than the male GPs and more often worked part time in groups or partnerships and in cities, although not in deprived areas. They made fewer house calls and did less work outside office hours. Differences between men and women regarding workload diminished considerably after controlling for part-time work. When other characteristics of the person and the practice were taken into account, female GPs proved to be less involved in several curative services, except as the first contact for gynecological problems, but more involved in health education. Some differences were found in only certain types of health care systems.

**CONCLUSIONS.** The results may have important implications for working arrangements, training, education, and planning of resources for general practice in the future.

Over the past decades, the number of women practicing medicine has increased considerably. Eastern Europe has a tradition of women working in medicine, but the trend is more recent in Western Europe. This article examines how this emerging trend may affect the delivery of services in general practice.

Many studies have compared the activities of male and female general practitioners (GPs). Studies in Australia<sup>1</sup> and the Netherlands<sup>2</sup> have shown that more women with gynecological, endocrine, and psychosocial problems consult female GPs than male GPs. In the Netherlands<sup>3</sup> and the United Kingdom,<sup>4,5</sup> female GPs apply fewer technical procedures than their male counterparts. A Canadian study found that female GPs are less involved in obstetric care.<sup>6</sup>

Various studies have shown that female GPs are more attentive to psychosocial factors and more frequently use counseling techniques.<sup>6-14</sup> However, an international comparison found male GPs to be more involved as the doctor of first contact for mental and social problems.<sup>15</sup> Regarding the organization of the practice, there is conflicting evidence of gender-based differences in office hours, length of consultation, house calls, and on-call arrangements.<sup>1-5,16-18</sup>

In preventive services, female physicians have higher screening rates, especially for cervical and breast cancer.<sup>2,8,14,19-25</sup> Moreover, they feel more responsible for making sure their patients receive screening.<sup>13,26,27</sup> A higher involvement of female doctors was also reported in family planning and perinatal care.<sup>1,5,6,16,17</sup> Although differences appeared in specific aspects, the overall task profile does not differ between male and female physicians.

Part of the gender difference can be attributed to other factors, such as age. Female GPs are younger than male GPs.<sup>1,4,13,19,28</sup> The medical training of the females is thus more recent and may therefore place greater emphasis on preventive care and psychosocial aspects. Furthermore, female GPs are more likely to work in urban areas, to be part of group practices, and to be salaried or working on a part-time basis.<sup>1,4,13,19,26,28</sup>

It is hard to say how significant many of these findings are because they are based on (often small-scale) research that does not control for confounding factors. Few of these studies have taken into account factors like age of both the patient and the GP. Yet it is known that older GPs (who are often male) are consulted more frequently by older patients, because patients tend to stay with the same doctor. Besides, women usually prefer to consult a female doctor, particularly for gender-related services.<sup>1,3,16,29,30</sup> Women also consult their doctor more frequently than men and tend to present more problems.<sup>31,32</sup>

Two other factors should be taken into account: the availability and proximity of services, because these may differ between cities and rural areas and between countries, and features of the health care system, such as the mode of payment, employment status, and the formal gatekeeping role of GPs. One study found evidence of an association between mode of remuneration and gender-related professional attitudes.<sup>26</sup>

In this article, we take advantage of the large database derived from the European Study of Task Profiles in General Practitioners<sup>33,34</sup> to answer the following 2 research questions: Do male and female GPs in Europe differ in their personal and work-related characteristics, and do male and female GPs in Europe differ in their curative and preventive service profiles? If so, how can these differences be explained?

In line with the literature, we expect to find gender differences in work preferences, the organization and setting of the practice, and the provision of certain services. In countries in which patients are registered with a particular GP and have access to specialist services only after referral by this "gatekeeping" GP, we expect to find less difference in curative services. The reason is that when patients have particular problems for which they would like to see a doctor of the same gender, they have less freedom of choice to do so. In countries in which GPs are self-employed, we expect to find less or no difference by gender in preventive medicine and health education, because such services are rarely eligible items in these systems.

## METHODS

### Sampling and Data Collection

The study is based on data collected in 1993 and 1994 in the European Study of Task Profiles of General Practitioners.<sup>33,34</sup> In 32 European countries, 8,183 GPs provided answers to uniform questionnaires in their own language about themselves, their practice, and their involvement in the provision of curative and preventive services. The questionnaires were translated at the national level and were subsequently checked by licensed translators. The preferred random sampling procedure could not be applied in 7 countries, usually because of the lack of sampling frames. The data entry and analyses were carried out centrally at NIVEL in the Netherlands.<sup>33</sup>

The overall response rate was 50%, ranging from 87% to 30% among the countries. Possible bias resulting from nonresponse was estimated by comparing the respondents to national population parameters when available. In general, there was some underrepresentation of female GPs and of younger and older physicians.<sup>33</sup>

### Measures

**Dependent Variables.** Concerning curative services, the role of the GP in the first contact with a patient's health problems was measured for 27 specified health problems on a 4-point scale, ranging from "almost always" to "seldom/never." Similarly, the involvement in technical procedures (eg, minor surgery) was measured for 14 described procedures. The involvement in treatment and follow-up of (chronic) diseases was measured for 17 cases of specific diseases. The scores in each of these 3 task areas were averaged, and the result was assigned to each respondent.

Concerning preventive services, questions with precoded answers were used to measure each GP's involvement in screening for hypertension, serum cholesterol, and cervical cancer, as well as the involvement in health education, ie, clinics to stop smoking, to control alcohol abuse, and to monitor diet. Furthermore, there were questions on the involvement in pediatric surveillance and family planning/contraception.

**Independent and Control Variables.** The key independent variable is the gender of the GP. To study the independent effect of gender, several control variables were introduced. These concern the practitioners themselves, the practice, and the country's health care system.

Regarding the GP as a person, the following variables were used: age, completion of postgraduate training in family medicine, average number of working hours in regular services per normal week (self-reported), reported average number of office-based patient encounters per day, and amount of time usually allocated per visit as recorded in the appointment book.

At the practice level, the following variables were used: working solo or in a group practice, availability of certain equipment (a list of 10 items was used), willingness to visit patients at home, provision of services outside office hours, perceived proportion of socially deprived and elderly people among the practice population (compared with the national average), location of the practice (an inner-city, suburban/urban, or rural area), and distance to the nearest general hospital.

At the country level, the control variables were as follows: coordinating role of GPs (gatekeeping), employment status (salaried versus selfemployed), and political background of the country (Western Europe versus the former East Bloc countries).

### Statistical Procedures

Three dependent variables on curative services were measured by analyzing lists of items. After a scaling procedure, this resulted in individual scores. Items with  $\geq 85\%$  either positive or negative answers were removed from the list. Respondents providing answers for 75% of the items of a list were not taken into account for that aspect of service. Thus, the number of respondents may vary by the kind of service considered. Reliability analyses were quite satisfactory, with a Cronbach  $\alpha \geq 0.87$ . On the scale concerning the role of the GP on first contact with health problems, subscales were identified for the first contact with gynecological and psychosocial problems. Individual GP scores were calculated; the higher the score, the deeper the self-reported involvement.<sup>34</sup>

Involvement in preventive services was measured by questions with precoded answers per item of service. The analyses were based on the percentage of GPs being involved.

In conducting the multivariate analyses, we were aware of sources of variation in the scope of services to be located at the local level (GPs and practices) and the national level (system

characteristics and European region). To avoid the problem of both aggregation (loss of information) and disaggregation (overestimation of the effects of the higher-level variables), the data were analyzed by use of the hierarchical linear model<sup>35,36</sup> with the MLn software.<sup>37</sup> The multilevel analysis controlled for confounding variables on both levels. These were the following: age, postgraduate training, working hours, medical equipment, solo or group practice, degree of urbanization of the practice location, and distance to nearest hospital. The control variables at the national level were gatekeeping role, employment status, and the East-West distinction. To get a specific perspective on the health care systems, gender differences were also analyzed separately with respect to countries with or without a gatekeeper role for GPs, salaried versus self-employed GPs, and the former East Bloc versus Western Europe. Control variables have not been entered in Tables 3 through 5; full tables including these coefficients can be obtained from the authors.

## RESULTS

### Range of Services of Male and Female GPs

Male physicians were generally more involved in most of the services specified in Table 1. The exception was health education in special sessions, in which female doctors were more frequently involved. This pattern did not show up as often in distinct countries. Except for the application of technical procedures and management of diseases, significant differences were found in only a few countries. Regarding hypertension screening, for example, some countries had a higher involvement of male GPs, whereas other countries had a higher involvement of female physicians. In 5 countries, female doctors were more involved in the first contact with gynecological problems. This was in contrast to the results concerning other health problems. With respect to screening for cervical cancer, there were 3 countries with significant differences; in all 3, female physicians reported higher involvement. The higher involvement of female physicians in health education, found at the aggregate level, was absent in the analyses performed by country.

#### [ TABLE 1 ]

### Characteristics of the Person and the Work Situation

Well over half of our sample (58%) consisted of men. In 20 countries, male GPs outnumbered female GPs; in 8 (East European) countries, the proportion was the other way round; and in 4 countries, there was no significant difference. On average, male doctors were older; this difference was found in 17 countries. The following profile for female GPs emerged: Compared with their male counterparts, a smaller proportion had completed postgraduate (specialist) training in family medicine; they had fewer regular working hours per week; they had fewer office contacts per day and allocated slightly more time per patient; and they had a lower total workload for patient care per week (Table 2). When we took only full-timers into account, the workload difference diminished considerably. Moreover, the number of office contacts per day was even somewhat higher for female physicians. In many countries, female GPs worked fewer hours per week. In 9 countries, female physicians allocated significantly more time to each patient. In 11 countries, the patient workload of female doctors was lower, but in most of these countries, this difference disappeared if only full-timers were taken into account.

#### [ TABLE 2 ]

Female doctors were more likely to work in partnerships and group practices. They had less medical equipment at their disposal; they made fewer house calls; they were less involved in services outside of regular office hours; and they worked more frequently in inner cities (but less in practices with relatively large estimated numbers of socially deprived and elderly people). Male physicians were overrepresented in rural areas and in practices farther away from the hospital. Differences at the aggregate level were also found in a substantial number of individual countries, particularly in terms of medical equipment, location of the practice, and working in groups.

## Service Profiles

**Curative Services.** After adjustment for the control variables, we found significant gender differences in the provision of the various curative services (Table 3). Female GPs were more involved in the first contact with gynecological problems, although in the separate analysis this applied only to countries in Western Europe. The higher involvement of male GPs in the first contact with psychosocial problems, which was found at the general level, does not hold for countries with gatekeeping GPs or for countries in Western Europe. Involvement in the application of technical procedures and in the treatment and follow-up of disease was also higher among male GPs than among female GPs. This was true regardless of country or type of health care system. In countries with GPs in a gatekeeping position, the standardized coefficients were generally closer to zero than in the other countries. This means that gender differences were smaller in countries with a gatekeeping system. Similarly, we found greater differences between male and female physicians in the countries of the former East Bloc than in the West. The exception was first contact for gynecological problems, which virtually no GP in the East European countries reported.

### [ TABLE 3 ]

**Preventive Services.** With respect to health education, which is not central in the GP's task anywhere, female physicians were generally more involved than males in special sessions or clinics on three topics: smoking, alcohol use, and diet (Table 4). In the separate analyses, however, this greater involvement of female GPs did not hold for all types of health care systems, nor for all countries. The gender difference in clinics to stop smoking was not found in the countries with self-employed GPs. Female physicians were more involved in health education on alcohol use in Western countries, though not in countries with gatekeeping GPs. Involvement in health education on dietary issues was higher among female GPs in countries in which GPs are salaried and do not have a gatekeeping position, as well as in former East Bloc countries.

### [ TABLE 4 ]

Concerning involvement in screening of populations at risk of high levels of hypertension and serum cholesterol and of cervical cancer, no gender differences were found in the countries of Western Europe (Table 4). In the countries of Eastern Europe, female doctors were more involved than male GPs in screening for serum cholesterol and cervical cancer. Separate analyses including the gatekeeping role and employment status revealed no gender differences.

No gender differences were found for pediatric surveillance either at the aggregate level or in the separate analyses by subgroups of countries (Table 5). For family planning, we found that male GPs were more often involved than their female counterparts in Western Europe and in countries with gatekeeping GPs.

### [ TABLE 5 ]

## DISCUSSION

In countries with quite different health care systems, we found consistent gender differences in practice preferences. Compared with their male counterparts, female GPs were more often found in partnerships than in solo practices; they tended to work in urban rather than in rural areas; they made fewer house calls and were less involved in work outside regular office hours; and on average, they spent more time on each consultation. With respect to the number of office contacts per day (adjusted for part-time working), however, we found no difference between male and female GPs. These findings are in accord with our expectations derived from the literature.

Our expectation to find less difference in the provision of curative services in health care systems with gatekeeping GPs was confirmed by the results. With all distinguished services, the differences were smaller in these systems. Gender differences in curative services are less obvious among gatekeeping GPs, because by regulation a broad range of problems are channeled through the GP into the system,<sup>33</sup> some of which may be referred to other practitioners.



Concerning the provision of preventive services and health education, we expected to find less or no gender difference in systems with self-employed GPs. Here, the results were mixed. In these systems, we indeed found smaller or no gender differences with health education on smoking and food intake and cervical cancer screening. In the other services, however, the difference was even higher among self-employed GPs. It should be kept in mind that overall GPs reported a very low involvement in health education clinics; health education in general practice may be practiced more frequently in individual consultations. Because the overall involvement of GPs in cervical cancer screening in Eastern Europe was very low, we could not detect any difference related to gender. Yet even in Western Europe, we found no difference between male and female GPs, which seems to contradict the results of many studies.<sup>20-23,25</sup> In Western Europe, GPs have good opportunities for case finding and follow-up, and that is why they are increasingly called in with community screening programs. This trend decreases the chance of having gender differences.

The higher involvement of male GPs in family planning in Western Europe is not in line with results found by Britt et al<sup>1</sup> and Cooke and Ronalds,<sup>16</sup> and further research should clarify this difference.

We also wanted to know whether the patterns of services identified in local and regional studies were confirmed in this more broadly based study. Some of the differences we identified have particular bearing on curative services. The greater involvement of male GPs in curative services was related to their longer working hours and to the fact that male GPs predominated in rural areas. There were also differences in postgraduate training, which had been completed by relatively more male GPs. The available equipment was closely related to the range of services provided.

The greater involvement of male physicians in the application of technical procedures was in accordance with Dutch and UK studies. This picture was generally similar, regardless of the gatekeeper role and the remuneration system of GPs or the geographic location in the East or the West. The same result was found with respect to the treatment and follow-up of disease.

Furthermore, at least in Western Europe, female GPs were more involved as the first contact for women with gynecological problems. The absence of a difference in Eastern Europe must have resulted because primary care physicians, male and female, hardly saw any women with gynecological problems. We identified at the general level a greater involvement of male GPs in the first contact with psychosocial problems, apparently in contrast to most other studies. However, on further analysis, this turned out not to apply to countries in Western Europe or to countries with gatekeeping GPs. This restriction may help clarify this contradictory result, because the other studies did not cover countries in Eastern Europe.<sup>1,2,6-14</sup> Moreover, we asked about only the first contact with psychosocial problems, whereas Britt et al<sup>1</sup> and Bensing et al,<sup>3</sup> for instance, studied all contacts for psychological and social reasons.

We should also consider some methodological issues. This study did not entail random recruitment in all participating countries, and the rate of nonresponse was high. Because the questionnaire covers a broad range of issues and possible tasks, it is not likely that we have attracted GPs with particular interests more than others. For this reason, we do not think that we have identified a particularly biased group of GPs with regard to service provision. Gender selection is also an issue: The gender distributions of respondents in 21 countries were compared with the populations of GPs. Male GPs were slightly overrepresented in 3 countries; females, in 15 countries. In most cases, the deviation in our sample was .5% from the national proportion. It is quite possible that we missed some female GPs holding a small parttime job who might not have thought that the invitation to participate in this study was meant for them. We are aware that the results may have been affected by self-selection in the response. In individual countries, this may have led us to underestimate the gender differences. In the international comparison, however, we believe that the total number of female GPs was sufficient to permit generalization.

Another concern is the methodological difference between this large-scale international study and the local and regional studies to which we have referred. The methods used in these studies, such as direct observation or registration of patient contacts, would not be feasible in our study. This divergence puts a constraint on comparability. The strengths of our approach, which is based on self-reported activities, are its uniform application in many countries and the fact that it takes relevant confounders and other background variables into account. These features form the basis for a good international comparison.

## Study Implications

The importance of the study lies in its implications for the future provision of care in general practice. At this point, we would like to suggest some likely trends.

**Working Arrangements.** Increased numbers of female GPs will encourage the establishment of group practices. For women, the flexibility of parttime work, the more limited commitment, and the possibility of salaried employment will often be more attractive. Female GPs were less involved in activities outside regular office hours. That is why new arrangements will be needed to ensure the provision of these services. In countries in which most GPs are still involved in evening, night, and weekend services, such as Denmark, the United Kingdom, and the Netherlands, there are experiments that point a way forward.

**Education.** Training for a part-time doctor is no less rigorous than for a full-time doctor and is the same for men and women. A temporary leave of absence and a limited volume of working time because of family commitments are inevitable consequences of the increased recruitment of female GPs. This results in a reduced working lifetime. Implications for the longer term therefore start with the recognition of a need for educating more doctors.

If the reduced activity of female GPs in the application of technical procedures would point to less adequate care, which has not been proven so far, additional education could be one of the remedies. Likewise, the difference found in some countries between male and female GPs in the reported recognition of psychosocial problems could also be addressed in the educational package.

**Resources in General Practice.** As doctors provide a smaller total volume of care in the course of their working lifetime, society will need more GPs. Otherwise, some tasks will have to be transferred to other health care workers. Therefore, national policies should be formulated for the future direction of the provision of primary care specifically addressing the role of GPs and their relation to other professionals. At fixed costs, one direction would be to promote more involvement of ancillary workers. If, however, the present system of access to health care by GPs is preferred, it may be necessary to increase the resources.

## ACKNOWLEDGMENTS

Several essential contributions to the European Study on Task Profiles of General Practitioners have been made by the national coordinators. We are grateful to Douglas Fleming and our colleagues at NIVEL for making comments on previous versions of this article.

**TABLES**

TABLE 1. Provision of Services by Male and Female GPs\*

Areas of GP service	Male GPs, † %	Female GPs, † %	Countries With Significant Differences, ‡ (n)	
			Male Higher	Female Higher
<b>Curative</b>				
First contact with health problems (mean score)				
All (n = 6,676)	3.0	2.5	6	...
Gynecological only (n = 7,330)	2.9	2.5	1	5
Psychosocial only (n = 7,404)	2.9	2.4	6	...
Application of medical techniques (mean score) (n = 6,597)	2.2	1.7	21	...
Treatment/follow-up of disease (mean score) (n = 6,979)	2.7	2.4	14	...
<b>Preventive</b>				
Screening for				
Hypertension (n = 8,045)	80.5	79.1 (NS)	5	5
Cervical cancer (n = 7,307)	51.6	45.8	...	3
Serum cholesterol (n = 7,973)	45.2	38.9	2	3
Health education sessions (n = 7,828)				
Smoking	12.7	16.3	1	...
Diet	12.4	16.6	1	...
Alcohol use	10.9	16.9	...	1
Family planning (n = 6,000)	75.3	54.8	2	3
Pediatric surveillance (n = 5,998)	65.3	54.6	4	2

\*All differences are significant ( $P < 0.001$ ) unless indicated by NS.

†Involvement scores range from 1 (low) to 4 (high).

‡Total number of countries: 32.



TABLE 2. Personal and Practice Characteristics of Male and Female GPs

Characteristics	Male GPs*	Female GPs*	Countries With Significant Differences <sup>†</sup> (n)	
			Male Higher	Female Higher
<b>Personal</b>				
Gender <sup>‡</sup> (n = 8,137), %	58.1	41.9	20	8
Age (mean) (n = 8,105), %	44.9	41.6	17	...
Postgraduate training completed (n = 7,956), %	46.0	34.3	3	3
Time in main position <sup>§</sup> (n = 7,927), h/wk	41.5	36.1	10	2
Office contacts per regular day, n				
All physicians (n = 7,914)	29.8	25.7	6	6
Full-timers only (n = 2,733)	32.0	34.3	3	3
Time allocated per patient (in appointment book) (n = 3,644), ¶, min	14.7	15.5	1	9
<b>Practice</b>				
Working solo (n = 7,985), %	45.2	27.0	6	...
Medical equipment (up to 10 items) (n = 8,137), n	4.9	4.0	14	...
Making house calls (n = 8,002), %	15.2	12.7	14	2
Involvement in after-hours services (n = 7,918), %	59.9	41.5	7	...
Socially deprived above national average (n = 6,996), %	20.6	17.7	5	...
Elderly above national average (n = 7,012), %	41.8	35.1	4	1
Practice location (n = 8,084), %				
Rural	27.2	14.9	7	1
Inner city	18.7	33.7	...	10
Hospital >5 km	58.7	50.4	5	...

\*All differences are significant ( $P < 0.001$ ).

<sup>†</sup>Total number of countries: 32.

<sup>‡</sup>Gender distribution in our sample.

<sup>§</sup>Excluding hours for on-call services.

<sup>¶</sup>Only GPs working with an appointment system.

TABLE 3. Standardized Regression Coefficients of Gender (Female = 1) With GP Involvement in 5 Measures of Curative Services, Controlled for Personal and Practice Variables

Type of Country's Health Care System, European Region	Position as the Doctor of First Contact With Health Related Problems, $\beta$			Application of Technical Procedures (n = 6,177), $\beta$	Treatment and Follow-Up of Disease (n = 6,531), $\beta$
	All Health Problems (n = 7,433)	Gynecological Problems (n = 6,841)	Psychosocial Problems (n = 6,898)		
All systems/countries	-0.008	0.063*	-0.047*	-0.096*	-0.083*
With gatekeeping GPs	0.006	0.034*	-0.024	-0.085*	-0.065*
No gatekeeping GPs	-0.018	0.059*	-0.072*	-0.101*	-0.096*
With self-employed GPs	0.012	0.068*	-0.033*	-0.092*	-0.065*
With salaried GPs	-0.009	0.063*	-0.049*	-0.098*	-0.086*
Former East Bloc	-0.034*	0.031	-0.090*	-0.150*	-0.095*
Western Europe	0.018	0.099*	-0.017	-0.079*	-0.066*

\*Significant value ( $P < 0.05$ ).

TABLE 4. Standardized Regression Coefficients of Gender (Female = 1) With GP Involvement in Health Education and Screening, Controlled for Personal and Practice Variables

Type of Country's Health Care System, European Region	Health Education Concerning			Screening of Risk Groups for		
	Smoking (n = 7,380), $\beta$	Alcohol Use (n = 6,847), $\beta$	Diet (n = 7,330), $\beta$	Hypertension (n = 7,329), $\beta$	Serum Cholesterol (n = 7,322), $\beta$	Cervical Cancer (n = 7,274), $\beta$
All systems/countries	0.052*	0.038*	0.031*	-0.007	0.007	0.011
With gatekeeping GPs	0.073*	0.021	0.024	-0.024	-0.013	-0.014
No gatekeeping GPs	0.035*	0.055*	0.039*	0.010	0.024	0.033
With self-employed GPs	0.015	0.044*	-0.019	-0.020	-0.028	-0.001
With salaried GPs	0.062*	0.034*	0.049*	0.001	0.022	0.018
Former East Bloc	0.054*	0.015	0.065*	0.015	0.047*	0.038*
Western Europe	0.043*	0.045*	0.002	-0.021	-0.023	-0.011

\*Significant value ( $P < 0.05$ ).

TABLE 5. Standardized Regression Coefficients of Gender (Female = 1) With GP Involvement in Pediatric Surveillance and Family Planning Controlled for Personal and Practice Variables

Type of Country's Health Care System, European Region	Pediatric Surveillance (n = 5,557), $\beta$	Family Planning (n = 5,561), $\beta$
All systems/countries	0.016	-0.023
With gatekeeping GPs	-0.008	-0.053*
No gatekeeping GPs	0.036	-0.001
With self-employed GPs	-0.007	-0.032
With salaried GPs	0.018	-0.021
Former East Bloc	-0.009	0.041
Western Europe	0.015	-0.062*

\*Significant value ( $P < 0.05$ ).

## REFERENCES

1. Britt H, Bhasale A, Miles DA, et al. The sex of the general practitioner: A comparison of characteristics, patients, and our conditions managed. *Med Care* 1996;34:403-415.
2. Van den Brink-Muinen A, de Bakker DH. Consultations for women's health problems: Factors influencing women's choice of sex of general practitioner. *Br J Gen Pract* 1994;44:205-210.
3. Bensing JM, van den Brink-Muinen A, de Bakker DH. Gender differences in practice style: A Dutch study of general practitioners. *Med Care* 1993;31:219-229.
4. Wilkin D, Hallam L, Leavy R, et al. *Anatomy of urban general practice*. London, UK: Tavistock Publications; 1987.
5. Chambers R, Campbell I. Gender differences in general practitioners at work. *Br J Gen Pract* 1996;46:291-293.
6. Keane D, Woodward CA, Ferrier BM, et al. Female and male physicians: Different practice profiles. *Can Fam Physician* 1991;37:72-81.
7. Roter D, Lipkin S, Kortgaard A. Sex differences in patients' and physicians' communication during primary care visits. *Med Care* 1991;29,11:1083-1093.
8. Bertakis KD, Helms LJ, Callahan EJ, et al. The influence of gender on physician practice style. *Med Care* 1995;33:407-416.
9. van den Brink-Muinen A. Women's health care: For whom and why?. *Soc Sci Med* 1997;44,10:1541-1551.
10. van den Brink-Muinen A, Bensing JM, Kerssens JJ. Gender and communication style in general practice: Differences between women's health care and regular health care. *Med Care* 1998;36:100-106.

11. Lorber J. Gender and the social construction of illness. Thousand Oaks, Calif: Sage Publications; 1997.
12. Maheux B, Dufort F, Lambert J, et al. The professional attitudes and clinical practices of men and women generalist. *Can Fam Physician* 1989;35:59 – 63.
13. Maheux B, Dufort F, Be´land F, et al. Female medical practitioners: More preventive and patient oriented? *Med Care* 1990;28:87–92.
14. Lurie N, Margolis KL, McGovern PG, et al. Why do patients of female physicians have higher rates of breast and cervical cancer screening? *J Gen Intern Med* 1997;12:34–43.
15. Boerma W, Verhaak PFM. The general practitioner as the first contacted health professional by patients with psychosocial problems: A European study. *Psychol Med* 1999;29:689–696.
16. Cooke M, Ronalds C. Women doctors in urban general practice: The patients. *Br Med J* 1985;290:753– 755.
17. Hooper J. Full-time women general practitioners: An invaluable asset. *J R Coll Gen Pract* 1989;39:289 –291.
18. Groenewegen PP, Hutten JBF. The influence of supply-related characteristics on general practitioners' workload. *Soc Sci Med* 1995;40:349 –358.
19. Cooke M, Ronalds C. Women doctors in urban general practice: The doctors. *Br Med J* 1985;290:755–758.
20. Hall JA, Palmer RH, Orav EJ, et al. Performance quality, gender and professional role: A study of physicians and non-physicians in 16 ambulatory care practices. *Med Care* 1990;28:489 –501.
21. Osborne EH, Bird JA, McPhee SJ, et al. Cancer screening by primary care physicians: Can we explain the differences? *J Fam Pract* 1991;32:465– 471.
22. Franks P, Clancy CM. Physician gender bias in clinical decision making: Screening for cancer in primary care. *Med Care* 1993;31:213–218.
23. Kreuter MW, Strecher VJ, Harris R, et al. Are patients of women physicians screened more aggressively? *J Gen Intern Med* 1995;10:119 –125.
24. Andersen MR, Urban N. Physician gender and screening: Do patient differences account for differences in mammography use? *Women Health* 1997;26:29 –39.
25. Reid SE, Simpson JM, Britt HC. Pap smears in general practice: A secondary analysis of the Australian Morbidity and Treatment Survey 1990 to 1993. *Aust N Z J Public Health* 1997;21:257– 264.
26. Maheux B, Dufort F, Lambert J, et al. Do female general practitioners have a distinctive type of medical practice? *Can Med Assoc J* 1988;139:737–740.
27. Lurie N, Slater J, McGovern P, et al. Preventive care for women: Does the sex of the physician matter? *N Engl J Med* 1993;329:478–482.
28. Hingstman L, Van der Velden LFJ. *Behoefteraming Huisartsen 1997–2010 [Manpower planning general practitioners 1997–2010]*. Utrecht, Netherlands: NIVEL; 1998.
29. Graffy J. Patient choice in a practice with men and women general practitioners. *Br J Gen Pract* 1990;40:13–15.
30. Fennema K, Meyer DL, Owen N. Sex of physician: Patients' preferences and stereotypes. *J Fam Pract* 1990;30:441– 446.
31. Van der Velden J, De Bakker DH, Claessens AAMC, et al. *Dutch National Survey of General Practice: Morbidity in general practice*. Utrecht, Netherlands: NIVEL; 1992.
32. McCormick A, Fleming D, Charlton J. *Morbidity statistics from general practice: Fourth National Study 1991–1992*. London, UK: Office of Population Censuses and Surveys, HMSO; 1995. Series MB5 No. 3.
33. Boerma W, Van der Zee J, Fleming D. Service profiles of general practitioners in Europe. *Br J Gen Pract* 1997;47:481– 486.
34. Boerma W, Groenewegen P, Van der Zee J. General practice in urban and rural Europe: The range of curative services. *Soc Sci Med* 1998;47:445– 453.
35. Jones K. *Everywhere is nowhere: Multilevel perspectives on the importance of place*. Portsmouth: University of Portsmouth; 1993.
36. DiPrete DA, Forristal JD. Multilevel models: Methods and substance. *Annu Rev Sociol* 1994;20:331–357.
37. Woodhouse G. *A guide to MLn for new users*. London, UK: University of London, Institute of Education; 1995.