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Illness behaviour of general practitioners—a cross-sectional survey

S. Schulz[1], F. Einsle[2], N. Schneider[1], M. Wensing[3] and J. Gensichen[1,4]

[1]Institute of General Practice and Family Medicine, Friedrich Schiller University, School of Medicine, Jena University Hospital, D-07743 Jena, Germany, [2]Technische Universität Dresden, Institute of Clinical Psychology and Psychotherapy, Chemnitzer Str. 46, D-01187 Dresden, Germany, [3]Radboud University Nijmegen Medical Centre, Radboud Institute of Health Sciences, PO Box 9101, 6500HB Nijmegen, The Netherlands, [4]Institute of General Practice/Family Medicine, University Hospital of LMU Munich, Pettenkoferstr. 8a/10, 80336 München, Germany.

Correspondence to: S. Schulz, Institute of General Practice and Family Medicine, Friedrich Schiller University, School of Medicine, Jena University Hospital, Bachstr. 18, D-07743 Jena, Germany. Tel: +49 (0) 3641 9395804; fax: +49 (0) 3641 9395802; e-mail: sven.schulz@med.uni-jena.de

Background	International guidelines recommend that physicians should be registered with a general practitioner (GP) and should avoid self-treatment. Adherence to these recommendations is mixed.
Aims	To describe illness behaviour and chronic medical conditions of GPs in Germany.
Methods	Cross-sectional, observational questionnaire study. We contacted 1000 GPs by mail in April 2014. We asked about registration with a GP, chronic conditions and self-treatment. We undertook descriptive statistical analysis and analysed associations using *t*-tests and chi-square test.
Results	Two hundred and eighty-five responses (29%) were eligible for analysis. Nineteen per cent of GPs were registered as patients of a GP, 58% reported at least one chronic condition, 68% disclosed self-diagnosis and 60% self-treatment. Self-therapy for chronic conditions was inversely correlated with subjective severity of the disease ($r = -0.159$; $P < 0.05$).
Conclusions	The high rates of self-treatment and the low rate of registration with a GP of German GPs are in contrast to international guideline recommendations. Further research is needed to analyse specific reasons.
Key words	Chronic condition; general practitioner; illness behaviour; physician health; self-treatment.

Introduction

Physicians are trained to care for their patients with a high level of responsibility and professional competency. However, their own illness behaviour does not always meet these standards, particularly regarding help-seeking and self-treatment [1,2]. There are few studies but guidelines recommend that physicians should be registered with a general practitioner (GP) and consult their GP for health problems [3]. Nevertheless, recent data showed that overall only 56% were registered with a GP [4] with the lowest rate of 21% in Switzerland [5]. Guidelines recommend avoiding self-treatment [3,6]. But self-treatment seems common and appears to be nearly universal when a physician is ill [7,8]. A review found that rates of self-treatment exceeded 50% in 76% of the 27 studies analysed [4]. Another review found studies suggesting between a quarter and almost all doctors reporting self-treatment [9]. Like many of their patients, physicians struggle to cope with chronic illness [10]. Poor health in physicians can compromise their performance and adversely affect standards of care [11]. Previous research has come mostly from English-speaking countries, while studies and guidelines are missing in Germany [12]. Findings from other countries are not fully applicable in Germany due to differences in health care systems. The German Health Care System is characterized by mandatory health insurance (statutory or private) for the whole population. Patients have a free choice of doctors. More than 90% of adults in Germany have a regular GP as their first professional contact [13]. The system is separated into outpatient and inpatient sectors. Most GPs work in private practices in the outpatient sector under contract to the statutory health insurer.

The aim of this study was to describe illness behaviour and chronic medical conditions of GPs in Germany.

Methods

We conducted this observational study in April 2014, contacting a convenience sample of 1000 GPs in Central Germany (Thuringia and Saxony) by mail. The sample comprised 365 GPs cooperating with an Institute of General Practice and Family Medicine and 635 GPs selected randomly from the registry of the Association of Statutory Health Insurance Physicians. Eligible physicians received a study information sheet, an informed consent form, the questionnaire and assurance that their response was voluntary and would remain anonymous. We designed the comprehensive questionnaire and adjusted it after a pilot test with three physicians. We asked participants to sign the consent and complete and return the questionnaire within 6 weeks. We sent postal reminders 4 weeks after the first mail contact. The Ethics Board of the Friedrich Schiller University Jena approved the study (Registration-No. 4058-04/14).

We asked 'Do you have a regular GP (not yourself)?', how often participants had contacted their GPs in the last 12 months (never, one or two times, three to four times, five to six times, or more than six times) and whether participants had a chronic medical condition ('Yes' or 'No'). We asked participants to specify their chronic medical conditions from a cluster of entities based on the Cumulative Illness Rating Scale (CIRS) [14] and how long they had had them. We asked participants to indicate their conditions' severity on a five-point Likert scale ('no problem' to 'extremely hard problem'). We asked participants to rate self-treatment for acute illness on a four-point Likert scale ('applies' to 'does not apply') regarding: (i) self-diagnosis and (ii) self-therapy. We combined the categories of 'rather not applicable' and 'not applicable' in association analysis to increase statistical power. We asked participants with a chronic illness to rate the extent to which they undertook self-therapy on a seven-point Likert scale ('no self-therapy' to 'always').

Beyond descriptive analysis of all topics, we analysed all associations with the following sociodemographic variables (age, gender, family status, working status and practice structure). For these analyses, we dichotomized practice structure into single practices and collective practices. We further analysed the association between chronic conditions and registration with a GP. We analysed registration with a GP and chronic conditions (presence, number, duration and severity) for association with self-treatment. We calculated these associations using comparison tests depending on the level of data, in particular *t*-tests and the chi-square test. These tests sought to explore differences between physicians who were and were not registered with a GP and between physicians with and without chronic disease. Furthermore, we tested associations using correlation analyses depending on the level of data, particularly the chi-square test and Pearson product-moment correlation. We excluded missing data from the analysis. The statistical analysis used SPSS version 22 with the level of significance set at 5% for all two-sided tests.

Results

Of the 1000 GPs approached, 303 responded. Of these, 18 did not return a consent form. So 285 responses (29% response rate) were eligible for analysis. Of these, 141 (49%) were from GPs cooperating with an Institute of General Practice and Family Medicine, and 144 (51%) from GPs randomly selected from the registry of the Association of Statutory Health Insurance Physicians. Table 1 shows the sample characteristics of the study population.

Our analysis of non-responders detected no systematic bias regarding gender.

GPs cooperating with an Institute of General Practice and Family Medicine more often reported owning their own practice and working as specialists in internal medicine acting as GPs. GPs randomly selected more often reported working in practice communities or medical care units. As we found no other differences in sociodemographic variables or in any of the study variables of

Table 1. Characteristics of study population[a]

	M (SD)/ *n* (%)
Age (years)	53.5 (8.94)
Gender	
Female	185 (65)
Male	97 (34)
Familial status	
Married	221 (77)
Widowed, separated, divorced	33 (12)
Partnership	21 (7)
Single	5 (2)
Number of children	2.1 (1.41)
Specialization	
Specialist for general medicine	263 (92)
Specialist in internal medicine working as GP	21 (7)
Medical practitioner	1 (1)
Time of professional life as physician (in years)	27.3 (10.0)
Time of working in outpatient treatment (in years)	21.9 (11.1)
Working status	
Practice owners	254 (89)
Salaried employees	25 (9)
Practice structure	
Single practice	185 (65)
Joint practice	56 (20)
Practice communities	23 (8)
Medical care unit	17 (6)

[a]Differences in percentages are due to non-specific answers.

illness behaviour, we combined these two subsamples for the analysis.

One hundred and sixty-three (57%) respondents reported at least one chronic condition. Respondents reporting at least one chronic condition were significantly older ($t = -5.6$; $P < 0.001$). The occurrence of chronic conditions was not correlated with gender. The mean duration of chronic conditions was 12.0 (SD = 11.0) years. The median of the self-rated severity was 2 (mild problem; mean = 2.15 ± 0.8). Cardiovascular conditions ($n = 77$; 47%) were the most frequently reported, followed by back, hip or joint conditions ($n = 62$; 38%); diabetes and other metabolic conditions ($n = 35$; 21%); respiratory conditions ($n = 17$; 10%); cancer ($n = 14$; 9%) and central nervous system conditions ($n = 9$; 5%). Thirty-eight respondents (23%) reported another category of condition, including ophthalmologic, gastrointestinal, allergy and migraine. Respondents reported a mean of 1.5 chronic conditions (SD = 0.78; range 1–4).

Fifty-four (19%) respondents reported registration as a patient with a GP. Of these, 24 (44%) reported no contact with their GP in the last 12 months, while 15 (28%) reported consulting their GP once or twice. One respondent reported contacting their GP more than twice in the last 12 months. Fourteen (26%) did not report their consultation rate.

Sociodemographic variables showed association between registration with a GP and working status, i.e. practice owner or salaried employee ($\chi^2 = 7.80$; $P < 0.05$), as well as with practice structure: single or collective ($\chi^2 = 5.11$; $P < 0.05$).

Table 2 shows significant association between registration with a GP and reporting at least one chronic condition ($P < 0.01$). Respondents registered with a GP more frequently reported at least one chronic condition. However, 123 (76%) respondents with a chronic condition reported not being registered with a GP. GPs who were registered with a GP were less likely to use self-diagnosis in the case of acute illness ($P < 0.001$). We found no statistical associations between self-diagnosis and sociodemographic variables or chronic conditions. Female GPs reported no or only slight self-therapy for acute disease significantly more often ($\chi^2 = 8.34$; $P < 0.05$), while male GPs undertook self-therapy more frequently. GPs reporting no or only slight self-therapy for acute disease were significantly ($F = 3.4$; $P < 0.05$) older (58.9 ± 10.8 years) than GPs reporting self-therapy (52.7 ± 9.1 years). GPs registered with a GP more often reported no self-therapy for acute illness ($P < 0.001$). We found no statistical associations between self-therapy and chronic conditions.

Table 3 shows that 68% respondents reported using self-diagnosis and 60% self-therapy. The mean of self-therapy was 4.9 (SD = 1.97) in the 165 respondents with at least one chronic condition. There was a significant difference between respondents registered with a GP and those not registered in the amount of self-therapy for chronic conditions ($P < 0.01$; see Table 3). Respondents with chronic conditions and registered with a GP reported significantly lower levels of self-therapy. Respondents reporting more severe conditions reported significantly less self-therapy ($r = -0.159$; $P < 0.05$).

Table 2. Variables related to the presence of chronic conditions and illness behaviour variables depending on registration with a GP

	Registered with a GP ($n = 54$), *M* (SD)/*n* (%)	Not registered with a GP ($n = 231$), *M* (SD)/*n* (%)	Comparison test
Chronic condition			
Yes	40 (74)	123 (53)	$\chi^2 = 7.4$ ($P < 0.01$)
No	14 (26)	106 (46)	
Not specified	0 (0)	2 (1)	
For GPs with chronic condition:	$n = 40$	$n = 123$	
Mean duration of chronic condition (in years)	12.6 (9.21)	11.7 (11.60)	$t = -0.41$ (NS)
Self-rated severity of chronic condition	2.3 (0.85)	2.1 (0.82)	$t = -1.34$ (NS)
Number of chronic conditions	1.7 (0.93)	1.5 (0.72)	$t = -1.47$ (NS)
Amount of self-therapy in case of chronic condition	4.2 (1.92)	5.2 (1.93)	$t = 2.87$ ($P < 0.01$)
If I'm acutely ill, then I perform diagnosis by myself			
Applicable	23 (43)	165 (71)	$\chi^2 = 22.2$ ($P < 0.001$)
Slightly applicable	19 (35)	46 (20)	
(Slightly) not applicable	11 (20)	12 (5)	
Not specified	1 (2)	8 (3)	
If I'm acutely ill, then I provide my own therapy			
Applicable	14 (26)	154 (67)	$\chi^2 = 61.3$ ($P < 0.001$)
Slightly applicable	26 (48)	68 (29)	
(Slightly) not applicable	13 (24)	2 (1)	
Not specified	1 (2)	7 (3)	

NS, non-significant.

Table 3. Descriptive analysis of self-diagnosis and self-therapy for acute illness

If I'm acutely ill, then I…	Applicable, *n* (%)	Rather applicable, *n* (%)	Rather not applicable, *n* (%)	Not applicable, *n* (%)
…diagnose myself. (*n* = 276)	188 (68)	65 (24)	17 (6)	6 (2)
…treat myself. (*n* = 277)	168 (60)	94 (34)	10 (4)	5 (2)

We found no statistical associations between self-therapy in chronic conditions and sociodemographic variables.

Discussion

In this questionnaire study of GPs in Germany, we found 19% reported being registered as patients with a GP. Self-diagnosis and self-therapy for acute illness were common, with 68% reporting self-diagnosis and 60% self-treatment. Fifty-eight per cent of respondents reported at least one chronic condition. Self-therapy for chronic conditions was inversely correlated with the subjective severity of the disease.

To our knowledge, this is the first study examining illness behaviour of German GPs. Other studies have examined health behaviour and working conditions of German physicians [15,16], but illness behaviour had not been a focus. Associations between registration with a GP and health behaviour and between chronic conditions and health behaviour have not previously been described for GPs.

The following study limitations should be considered. The study used self-reported data, which may be susceptible to recall inaccuracies. The response rate was low and implies a risk of selection bias, although the sociodemographic characteristics of the study population were comparable to all GPs in Germany regarding age, working in a single practice and practice ownership [17]. The participation of women in our study (65%) was marginally lower than the proportion for all GPs in Germany [17]. The personal nature of the topic may partly explain the low response rate [18].

Our 19% rate of GPs registered as patients with a GP is lower than any in existing literature, with rates between 21 and 100% reported in other studies [9]. In the German health care system, patients can directly seek advice from a medical specialist. Informal consultation is a common practice in physicians [19], as is self-treatment. These factors may contribute to the low rate of GP registration.

Participants with chronic conditions were more likely to be registered with a GP. It is unclear if the appearance of a chronic condition drives registration with a GP or if registration leads to higher rates of detection of chronic conditions. Physicians working in collective practices were more likely to be registered with a GP. Availability of a local GP and lack of time are known barriers for seeking health care [9] and may be easier to solve for GPs in collective practices. It may be easier for GPs in collective practices to expose themselves to colleagues personally and emotionally. Most GPs in Germany are self-employed and so do not need sickness certification. This may explain the higher registration rate among salaried employees.

The rates of self-diagnosis and self-therapy for acute illness are in line with data from existing reviews showing self-treatment rates of >50% in 76% of the 27 analysed studies and a range for self-treatment of a quarter to almost all physicians [4,9]. Being registered with a GP seems to reduce the tendency for self-diagnosis and self-therapy. Self-therapy for chronic conditions was commonly reported in our study. In the literature, rates of self-treatment for chronic conditions are up to 37% [20,21]. A direct comparison is not possible due to our measurement with a seven-point Likert scale.

Existing international guidelines generally recommend avoiding self-treatment [3,6,22] because it lacks objectivity and the assurance of quality of care [20,21,23]. There are exceptions, such as in case of emergency or minor ailments. The literature shows that physicians practice different rates of self-treatment for different diseases [24]. The definition of minor ailment may be controversial and it is difficult to identify clear boundaries between inappropriate self-treatment and more acceptable examples [2]. We did not specifically record the kind of self-treatment or its causes.

In our study, lower self-treatment was associated with greater severity of chronic conditions. This could indicate that the level of suffering is relevant for seeking professional help.

The 58% of our participants with at least one chronic condition is higher than in the general German population. In the 'Current health in Germany' [GEsundheit in Deutschland Aktuell (GEDA)] study, 43% of women and 38% of men indicated they have at least one chronic condition [25]. Other studies have found the prevalence of chronic conditions in physicians is lower than in the general population and varies between 13 and 44% [20,26]. As a selection bias, physicians with chronic conditions may have had a greater interest in taking part in a study on physician health. Over-reporting is also possible due to the availability of diagnostic instruments for physicians. One-third of our population estimated the severity of their chronic condition as a medium-to-severe and we assume that, for these doctors, their condition impacted on their work performance.

This study reports illness behaviour in German GPs for the first time but further more representative and detailed research into this field in Germany is needed. This could lead to the development of guidelines and educational strategies.

Key points

- German general practitioners do not always meet the international guideline recommendations regarding help-seeking and self-treatment.
- We found a very low rate of German general practitioners registered with a general practitioner and rates of self-treatment comparable to international studies.
- Beside further research into the topic, there is a need for the development of guidelines and educational strategies in Germany.

Conflicts of interest

None declared.

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