



# BMJ Open Illness behaviour and influencing aspects of general practitioners in Germany and their use of the health care system: a qualitative study

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## ABSTRACT

**Objectives** The aim of this study was to explore aspects that play a role when general practitioners (GPs) become ill and thus gain a more comprehensive understanding of the overall illness behaviour of GPs and their use of the healthcare system.

**Setting** Primary care practices in Thuringia, Germany.

**Participants** Convenience sample of 16 GPs.

**Design** Qualitative study design with semistructured interviews and content analysis.

**Results** Using our approach of having participants report their own episodes of illness, we found that self-treatment was practised and accepted by all 16 participants. The widespread use of naturopathy and complementary methods seems to be a special feature of German GPs. Formal use of the healthcare system mainly took place through direct consultation with specialists.

Our study revealed various aspects influencing the illness behaviour of the GPs and their use of the healthcare system. Some aspects also apply to lay patients, but it became clear how strongly illness behaviour is influenced by participants' activities as physicians. Noteworthy and less described aspects are especially the influence of patients and practice staff, the influence of biographical and professional imprint and the attitudes and values of the physicians.

Complex inter-relationships were found between illness behaviour and influencing aspects; these are subjected to a dynamic and recursive process.

**Conclusions** The illness behaviour of German GPs seems to be comprehensively influenced by their activities as responsible healthcare providers. The ability to perceive and reflect in this regards should already be actively promoted in studies and further education. Further research is needed for a better understanding of the inter-relationships.

## BACKGROUND

Illness behaviour, as defined by Mechanic, 'refers to the varying ways individuals respond to bodily indications, how they monitor internal states, define and interpret symptoms, make attributions, take remedial actions and use various sources of informal and formal care'.<sup>1</sup> With a focus on health-care utilisation, the behavioural model of

## STRENGTHS AND LIMITATIONS OF THIS STUDY

- ⇒ Our study revealed numerous specific aspects influencing general practitioners (GPs') utilisation of healthcare services in the case of their own illness.
- ⇒ The qualitative approach using the narrative of personal illness episodes enabled us to reveal unobservable aspects such as the influence of patients and practice staff as well as the influence of biographical and professional imprint on the illness behaviour of GPs.
- ⇒ The limitations are the small sample size, which restricted the sample to GPs from Germany, the time span between interviews and publication and the retrospective nature of the interviews.

health services use developed by Anderson is considered the most important and most-cited framework in this research area.<sup>2</sup> This framework includes three major components: predisposing factors, enabling factors and need factors.<sup>3</sup> As a professional group, physicians are representatives of the healthcare system in this model. The model of Anderson relate to lay patients and may not be fully applicable to the specific group of physician–patients.

It is not necessary to state that physicians also get ill and if so, they are subjected to special circumstances that may influence their illness behaviour, including healthcare utilisation. As actors in the healthcare system, they have direct access to medical diagnostic and therapeutic procedures and, especially in Germany, there are hardly any legal restrictions in this regards. It can also be assumed that they have broader medical knowledge than most non-physicians.<sup>4</sup> Profession-specific cultural attitudes include avoidance of the patient role, acceptance of self-treatment, pressure from colleagues to continue work in the case of one's own illness and guarding that which is within one's own control.<sup>5</sup>

The existing literature on physician health focuses on describing the specific behaviours of physicians in the case of their own illness as well as on barriers to accessing the healthcare system. Specific behaviours include informal consultations,<sup>6,7</sup> self-treatment<sup>5</sup> and registration with a general practitioner (GP).<sup>8</sup> In a systematic review, Kay and colleagues categorise the barriers influencing the illness behaviour of physicians into patient related, provider related and system related.<sup>9</sup> Given that, in the case of their own illness, physicians switch from provider to (potential or actual) user of the healthcare system, it is important to know which aspects, beyond specific conditions and barriers, influence their behaviour when deciding whether to use the healthcare system.

Since there are hardly any studies on the illness behaviour of GPs in Germany, in this study, we want to explore which behaviour and influencing aspects arise when German GPs become ill and, thus, gain a more comprehensive understanding of their illness behaviour, with special emphasis on accessing healthcare.

## METHODS

In conducting this exploratory study, we used a qualitative approach involving semistructured interviews with a convenience sample of GPs in Germany. The German healthcare system is self-administrated. Statutory health insurance and private health insurance are made mandatory for all inhabitants. Most GPs have private health insurance, and the majority of family doctors are also self-employed. GPs are usually, but not necessarily, the first point of contact for sick patients. GPs were selected because they have extensive, broad medical knowledge covering many different specialities. This, together with the professional autonomy of many GPs, enables them to self-medicate and self-treat in almost all medical areas. The first author (SS) had previously conducted a cross-sectional study exploring the illness behaviour of this group.<sup>8</sup> The research team consisted of a female medical student (FH, doctoral candidate), a GP (SS) and a social scientist (US). A second GP (FW) assisted with the interpretation of the results and preparation of the manuscript. The medical student took part in a training course in preparation for the study. The social scientist is experienced in qualitative research. Quality criteria for qualitative research were used in the entire research process, from planning and data collection to analysis and the presentation of results.<sup>10,11</sup>

## Recruitment

To recruit participants, we promoted the study in a GP-specific advanced training course at Jena University Hospital in September 2014. We also promoted the study in quality circles and the teaching network via invitation emails from September 2014 to February 2015. Four GPs were recruited from the training course and 12 via invitation emails.

## Interview Guidelines

We developed an interview guide with an emphasis on physicians' descriptions of an experienced episode of illness, including the first symptoms and their behaviour during the process that followed. The initial question was, 'I suppose you yourself have felt very sick at least once in your life as a physician, so that you even thought of visiting a doctor. Could you please tell me about it?' The latter part of the semistructured interview was based on the individual content expressed by the GPs. Additional questions concerned participating GPs' beliefs about health and illness, the practice of self-treatment, their personal values and attitudes and their environment. Interview questions and topics were guided by existing assumptions and prior knowledge from the literature.<sup>5-9</sup>

## Data Collection

We conducted 16 open-guided interviews between December 2014 and March 2015. Fourteen of the 16 interviews took place in the participants' practices, one interview was conducted at the participant's home and one in the Institute of General Practice and Family Medicine Jena. The same interviewer (medical student) carried out all interviews. Participants were asked to complete a sociodemographic questionnaire after the interview (see online supplemental file 1). The interviewer wrote a memo with her impressions and specific circumstances immediately after each interview.

The interviews were conducted in German and lasted between 43 min and 119 min with an average length of 65 min. We obtained informed consent prior to the interviews. The participants received no incentive or compensation. The audio-taped interviews were transcribed verbatim using the software f4 and transcription rules.<sup>12</sup>

## Patient and public involvement

Patients and the public were not involved in the design, conduct, reporting or dissemination of the research.

## Analysis

We carried out a qualitative content analysis in accordance with recommendations from Kuckartz<sup>13</sup> using MaxQDA, version 11. Four of the 16 interviews (25%) and fixed terms from the international literature on physician health (eg, physician-patient)<sup>5,9,14</sup> were used for the development of the code system. An initial code system was developed by the medical student together with two students of sociology in the context of a seminar on content analysis with the inductive-deductive method used in the first two interviews. The initial categories in the code system included the subjects from the interview guidelines. Further categories emerged from the interviews.

In a consensual coding process in line with that of Hopf and Schmidt,<sup>15</sup> SvS, FH, and US analysed the following two interviews, revised the code system and worked out a codebook. The codebook was adapted during the analysis of all interviews in continuing consensus meetings.

**Table 1** Sociodemographic details of the participants

GPs (n=16)	
<i>Gender</i>	
Female	8
Male	8
<i>Age (Mean: 51,4 years)</i>	
40–50 years	8
50–60 years	7
60–70 years	1
<i>Marital status</i>	
Married	14
Single	1
Widowed	1
<i>Employment</i>	
Self-employed	14
Salaried	2
<i>Working area</i>	
Rural area (<5000 inhabitants)	3
Small town area (5000–20 000 inhabitants)	3
Large town area (>20 000 inhabitants)	10
GPs, general practitioners.	

The coding of the remaining interviews was performed by the medical student. The results were presented to the research team and ambiguous codings were discussed until a consensus was reached. This was followed by the analysis of the categories from the code system. In a more in-depth analysis, we examined the relationships and inter-relationships between the categories. The sociodemographic questionnaire was analysed using descriptive statistics.

## RESULTS

### Characteristics of the participants

All 16 participants completed the interviews and the questionnaire. The questionnaire yielded the following results. The participants had worked, on average, for 17 years in an outpatient setting (4 to 42 years). Twelve participants indicated that they suffer from at least one chronic disease. The reported diseases were of orthopaedic (5x), cardiovascular (4x), ophthalmological, neurological and endocrinological (2x each) nature. Seven GPs reported being registered with a GP. All participants stated that they were self-treating. For further details, see [table 1](#).

### Diseases/symptoms

Each participant mentioned and described at least one disease episode. [Table 2](#) summarises the first disease or symptoms described in the respective interview. All episodes occurred during the participants' work as GPs, except the episodes of astrocytoma, recurrent sinusitis and tachycardia. Other diseases and reasons for consultation

**Table 2** First-mentioned diseases/symptoms of the participants

Participant/gender	Illness/symptom
1/f	Diverticulitis
2/m	Astrocytoma
3/f	Persistent cough
4/f	Gynaecological bleeding
5/m	Sprained toe
6/m	Haematochezia
7/m	Laryngeal tumour (chondroma)
8/f	Recurrent sinusitis
9/m	Shoulder stiffness
10/f	Lumbar disc herniation
11/m	Tachycardia
12/m	Mental health problem
13/f	Cold
14/f	Influenza
15/f	Gastric ulcer
16/m	Gastric infection

mentioned in the interviews were preventive check-ups, various infections, other acute diseases (eg, carpal tunnel syndrome, arm fracture, cardiac arrhythmia, depression, abdominal pregnancy, miscarriage) and chronic diseases (eg, arterial hypertension, glaucoma, multiple sclerosis, polyarthritis).

### Illness behaviour and influencing aspects

The coding process resulted in 15 defined categories related to participants' illness behaviour and influencing aspects. Symptom perception and behaviour in the event of illness is summarised under *physician–patient*. Behaviour with regards to the formal *utilisation of health care system* was recorded in a separate category. Other category with behavioural aspects is *health behaviour*.

Influencing internal aspects are their *values and attitudes, medical knowledge, naturopathy/complementary methods, knowledge/assumptions about physician health, definition of healthiness* and their *definition of illness*. Influencing external aspects are their biographical and professional *imprinting, the health system* in which they work, their *environment, physician-treating physicians* and the *relationship with treating physicians*. Consequences caused by the diseases were recorded in a separate category. In the following, we describe the categories in detail.

### Physician–patient

All participants conducted self-treatment, often connected with going to work despite severe symptoms. Self-treatment included a wide range of diagnostic and therapeutic procedures, from inspection and palpation up to self-auscultation of the lungs and self-performed blood tests. Self-medication with samples or self-prescribed

medications was common, but self-prescribed physiotherapy was another example of self-treatment.

Besides self-treatment, some participants stated that they largely avoid using colleagues for reasons such as fear that colleagues might think they should treat it themselves. Other reasons were the unwillingness to wait and not wanting to sit with (their own) patients in the waiting room.

Symptom perception and illness behaviour differed between the participants and depended on the actual illness. The perception of symptoms included, in particular, an awareness of symptoms as well as their evaluation, fears and expectations. We more often found denial, repression and trivialisation of symptoms as defence mechanisms. For example, one participant said:

P01: I don't get sick.

In addition, a different approach to their own symptoms than to those of their patients was evident, and some participants consciously named it as such.

In the self-perception of some participants, it became clear that they were aware of their suboptimal handling of their own health; for others, this did not seem to be the case.

#### Utilisation of the healthcare system

There were two frequently cited reasons for using healthcare services: the duration and severity of symptoms and the limitations of the participant to act. Due to their own abilities and opportunities to act as a GP, for many complaints, participants highlighted not feeling the need to see another GP. If they needed help from other colleagues, in most of the cases described, they turned directly to specialists. This was also the case for participants who stated that they were registered with a GP. When they went to see colleagues, this was partly done as informal consultations with colleagues they worked with in the practice or in the same department. For formal consultations, some participants opted for acquaintances, some of them also friends and some participants opted for non-affiliated colleagues. This behaviour was not always consistent among the respective participants. Among other things, depending on the availability of the needed healthcare services and the necessary discretion regarding the disease, they decided on their respective courses of action. For example, one participant went to a known colleague for her gynaecological examinations and she explicitly went to a distant hospital for her miscarriages.

#### Health behaviour

The participants named not only everyday activities such as sport, nutrition or sleep but also preventive measures such as vaccinations or medical check-ups. In particular, vaccinations and medical check-ups led to healthcare utilisation, either carried out by oneself or by colleagues. Interestingly, some participants stated that they refused certain medical check-up procedures, such

as colonoscopy check-ups, because they questioned their effectiveness. The health behaviour influences, in part, whether a physician becomes ill at all, hence the potential need for utilisation in the event of illness.

#### Naturopathy/complementary methods

Several participants stated that they used naturopathy and complementary methods for both their patients and themselves. The spectrum ranged from phytotherapy via homoeopathy to magnetic field therapy. It included procedures for which there is no scientific evidence and which are not considered appropriate by conventional medicine. It became clear that the use of complementary medicine presupposes an open or affirmative attitude towards it. Often participants who used these methods had acquired corresponding knowledge.

#### Values and attitudes

All participants took a wide range of self-treatment for granted. This was based on both a high degree of conviction in the participants' own competence and a high demand for autonomy. At the same time, they showed a very high level of commitment to their patients and to society. The participants feel an obligation to those around them, namely, their families, the practice and the patients, and often believe that 'if I get sick, I let them down'. Additionally, participants expressed concerns that colleagues might complain if they are sick repeatedly or for too long. This can lead, for example, to GPs not allowing themselves the recovery time they actually need and continuing to work.

Moreover, it was shown that sometimes there were different attitudes towards dealing with illness in oneself and within patients:

P09: So, I don't treat patients in the same way. I take them all seriously and they are always perceived and treated seriously, even with the smallest trivialities. Yes. But I believe with myself, I do not grant myself this right.

#### Medical knowledge

Medical knowledge refers to both medical expertise including anatomical, physiological, diagnostic, therapeutic and procedural aspects as well as knowledge about the functioning of the health system. The advanced medical expertise of the physicians was evident from their language. Often, it was implicitly clear that this knowledge influenced the handling of their own illness:

P13: And actually as a medical doctor you know what is going on. (...) Yes. (.) And I had actually already thought it.

The knowledge of procedures can cause fear and influence illness behaviour, often in the form of avoidance:

P09: Well, there are already examination procedures in medicine that are not very pleasant, yes. Where you sometimes ask yourself: 'Good God, why do patients

even let you do that to them?’ I would not have that done to me.

The knowledge of healthcare system functioning refers to the people who work in it, including the quality of their work and the way they work as well as to institutional aspects like accessibility. This influences which person or institution and which discipline the participants turn to when they have (often self-determined) needs, or whom they explicitly do not turn to.

#### Knowledge/assumptions about physician health

Statements about physician health referred to the mental stress of the profession with higher levels of suicide, addiction and burnout. In addition, there is a physical risk from pathogens, for example. At the same time, the view prevailed that physicians are generally more careless with their health, put the patient’s well-being above their own and have difficulties accepting the patient’s role. At the same time, having an illness of their own helps them to better understand the patient perspective. Overall, physicians’ health is seen as a complex issue with a wide range of individual approaches.

#### Definition of healthiness

Many of the participants referred to the WHO definition of health in their definition of health but rejected it as unachievable. Most found it difficult to define health clearly for themselves. Frequently mentioned aspects were being able to function and not being restricted. A positive definition of health in the sense of feeling well or being vigorous or satisfied was also mentioned, but not as frequently.

P07: ...this WHO definition of health... If you look at it that way, there are no more healthy people. Therefore, this is not a useful definition. ... Illness is something that restricts me, which prevents me from doing the essential things in my life. And in that respect, I am healthy...

#### Definition of illness

Illness was defined reciprocally to definition of healthiness as functional limitation including physical or mental suffering. Medical diagnoses were also discussed but appeared to be of minor relevance for the physicians. Some participants defined illness partly in contrast to medical diagnoses. For example, one participant stated that he had high blood pressure but did not notice it and was, therefore, not ill.

#### Imprinting

Imprinting with relation to illness behaviour occurred in different factors and ranged from childhood to the present. Regarding childhood, a reoccurring theme was the role of parents working as nurses or physicians within the healthcare system:

P01: I come from a household where my mother was a nurse. ... I say I don't know any doctors in my childhood.

Imprinting also takes place for physicians while studying medicine and during professional life. This happens through their experience of patient histories and of teachers’ and other physicians’ behaviour. The experience of working as a GP seems to be of particular importance. It seemed to be a formative experience of medical culture, involving a considerable willingness to perform and putting one’s own needs aside.

The previous illness experiences of participants and the illnesses of family members or friends also shape how they deal with their own illnesses.

#### Health system

Systemic aspects of healthcare that became apparent in the interviews were a high workload combined with a lack of time for one’s own healthcare. Particularly in rural areas, there are fewer independent colleagues, who are not known from professional cooperation or from the private environment, to call on. Framework conditions of the German healthcare system include the legal possibility of self-prescription for physicians, including narcotics and self-referral. Furthermore, self-employed physicians do not need a sick note. There are hardly any special structures for the healthcare of ill physicians in Germany.

#### Environment

The environment in our study includes colleagues, patients, practice staff, family and friends. They have expectations of the ill physicians and influence them through direct interactions. The expectations, especially from colleagues and patients, of their behaviour as physician–patients are partly attributed to them, partly expressed in real terms. For example, the expectation that physicians must always be healthy was attributed to them from their own patients.

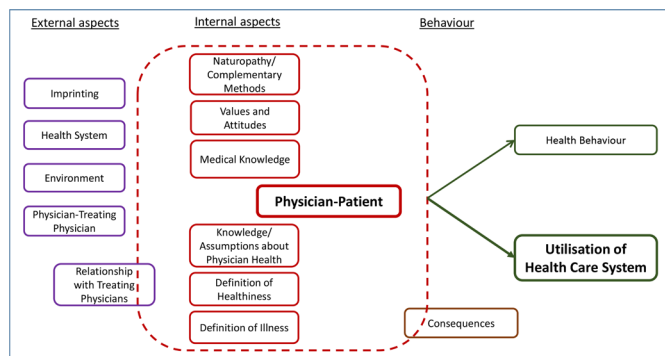
Colleagues and practice staff can appear supportive of ill physicians in terms of encouraging the physicians to take care of themselves. One participant stated the following with regards to his personal environment, concerning the clarification of his anaemia:

P11: I didn't care before, but they kept kneeling down until I agreed to have it clarified.

Overall, there was a complex interaction between the environment and the physician–patients.

#### Physician-treating physicians

In the participants’ description of their treating colleagues, it became clear that they sometimes expect medical knowledge and action to be taken on behalf of the physician–patients, up to and including self-supply with necessary medication. In part, this was also reflected by the interview participants regarding their own behaviour when treating colleagues themselves. At the same time, a careful and thorough approach by the colleagues treating them was described:



**Figure 1** Visualisation of the categories based on ref. 16 16

P02: ...there's a colleague who's being looked at particularly thoroughly.

Furthermore, the challenge for practitioners to separate themselves between the physician as a colleague and the physician as a patient and to switch between the levels when treating physicians became clear.

For some participants, an intense reflection on their experiences with other physicians they have been treated by as well as their own role when treating colleagues became apparent, which influenced their illness behaviour.

#### Relationship with treating physicians

The relationship between the physician–patient and their treating physician usually starts before the interaction because both parties often know one another as current or former colleagues, as mentioned above. Some participants prefer a formal, distanced relationship; others a more friendly, collegial relationship. Regardless of this, a confidential and especially trusting relationship was important to all participants.

Not only concrete experiences of special support, such as thorough treatment that was more comprehensive or shorter waiting times, were described, but also experiences of a lack of support, with the feeling of being left alone.

The relation to treating physicians can be complicated as they often treat the same patients. For example, one participant did not end his own treatment with a colleague despite dissatisfaction because he feared repercussions on the collegial relationship.

#### CONSEQUENCES

There were short-term consequences, such as having to close the practice due to illness, and long-term consequences. Some physicians stated that they changed their behaviour or working conditions as a long-term result of illness. Some stated they developed a better understanding of their patients based on their own illness experience. As mentioned in imprinting, an experience of illness can change behaviour in one's own case of illness or reinforce existing behaviour. A chronic condition can also cause the use of the healthcare system for follow-ups. 16

#### Inter-relationships of the categories

Figure 1 illustrates the interrelationships of the categories. The focus is on the *physician–patient* with his symptom perception and illness behaviour. The behaviour showed a high proportion of self-treatment. This influences, but is not limited to, the *utilisation of the healthcare system*. Healthcare utilisation as a specific aspect of illness behaviour was recorded in a separate category. Also in the context of *health behaviour*, for example, in the case of preventive care or vaccinations, the utilisation may or may not take place. *Health behaviour* partly influences whether a doctor becomes ill at all and, thus, the potential need to claim services in the event of illness. The use of *naturopathy/complementary methods* is on the one hand a specific illness behaviour coded under *utilisation of health care system*, on the other hand, as an internal aspect, a strong and widespread positive attitude towards it became clear. Therefore, this was recorded in a separate category. Further aspects influencing illness behaviour that are located in the person of the physician (internal aspects, illustrated within the dotted line) were recorded in the categories *attitudes and values*, *definition of illness or health*, *knowledge/assumptions about physician health* and *medical Knowledge*.

The *relationship with treating physician* includes both internal and external aspects. These and the external aspects recorded in the categories of *imprinting*, *health system*, *environment* and *physician–treating physician* can have an effect on the symptom perception and illness behaviour of the physician–patients and shape their internal aspects. At the same time, the person of the physician–patient influences the external aspects with their behaviour and attitudes. Thus, the relationships between illness behaviour and influencing aspects are subjected to a dynamic and recursive process.

The short-term and long-term *consequences* of own illness can change internal aspects and influence prospective behaviour coded in *utilisation of the healthcare system* and *health behaviour*.

#### DISCUSSION

Our study, with its qualitative approach, revealed a broad spectrum of aspects that influence GPs' illness behaviour, including utilisation of the healthcare system.

In relation to Andersen's existing behavioural model of health service utilisation,<sup>3</sup> many of the aspects found in our study can be assigned to the appropriate categories. Thus, the severity and duration of symptoms, as the most frequently cited reasons for utilisation from our participants, can be attributed to perceived need.

Knowledge in the sense of medical expertise fits with predisposing characteristics. Knowledge about healthcare providers and the health service organisations corresponds to enabling factors. The environment category in our study corresponds mostly with social relationships as an enabling factor in the framework by Andersen. The change from a responsible provider of the healthcare system to a (potential or actual) user is a special

characteristic of physicians. This is not reflected in Andersen's lay patient model. The resulting role conflict of physicians is already well described in the existing literature.<sup>14 17</sup> However, the difference goes beyond role conflict and we consider this to be an essential aspect of our study. The patient's own activity as a physician represents a significant difference from lay patients, which can and does influence their illness behaviour in a variety of ways as described in our categories.

In accordance with the existing literature, many aspects found in our study have already been identified, as summarised in the recently published review by Morishita and colleagues.<sup>18</sup> Furthermore, the influence of systemic conditions such as high workload and lack of time,<sup>9</sup> medical culture as captured in the imprinting category<sup>9 19</sup> or medical knowledge<sup>20 21</sup> are well described in the literature.

Self-treatment was practised by all participants. It is known from the literature that self-treatment is widespread among physicians.<sup>5</sup> What was striking on the one hand was the conviction and naturalness of the participants in engaging in self-treatment by taking advantage of their opportunities as GPs. Self-treatment was, on the other hand, partially considered wrong or inadequate and some of the participants were aware of the cognitive dissonance this caused. It was also noticeable that some of the participants reported treating themselves differently from their patients. There are several possible reasons for this attitude and behaviour. In addition to barriers such as a lack of time, there may be an unperceived need for external treatment or the simple conviction that they can treat themselves well. Furthermore, a need for autonomy or the, presumably unconscious, avoidance of dependence could play a role.

While international guidelines recommend avoiding self-treatment,<sup>22</sup> no guidelines are available in Germany. The consequence of self-treatment may be that formal healthcare utilisation is delayed. The high level of self-treatment also justifies the noted direct consultation with specialists as opposed to the use of primary care physicians recommended in guidelines. In this context, it should be taken into account that direct consultation of specialists is possible in the German healthcare system. In the discussion about self-treatment, it was apparent that self-treatment is common for all patients in the process of illness behaviour—from the first symptom to the use of professional help.<sup>23</sup> The extent to which self-treatment is appropriate for physicians often remains unclear. Only a few guidelines for physicians' health differentiate between minor and major ailments regarding the recommendations for self-treatment.<sup>24 25</sup> Possible positive economic effects and better outcomes through early treatment should be explored. In addition, a more precise definition of adequate self-treatment could be helpful both for further research and for the training of physicians.

Naturopathy/complementary medicine was another notable category that emerged through our study. It is known that complementary and complementary

medicine is used by approximately 60% of GPs when treating patients in Germany.<sup>26</sup> Our results indicate that GPs also use these treatment methods for themselves and seek out colleagues practising naturopathy. In Germany, there is an intensive discussion about the benefits and possible harms of alternative medical procedures and also about epistemological approaches of these procedures. In the application of these procedures, an open attitude towards these methods is evident, which is partly in contrast to their training in conventional medicine.

Other identified factors that were noteworthy were the influence of patients and practice staff, the influence of biographical and professional imprint and the attitudes and values of the physicians. These aspects are less frequently described in the existing literature. However, the less observable themes and expectations contained therein, some of which are unconscious, influence physicians' illness behaviours and their healthcare utilisation.

Finally, it became clear that in contrast to the often barrier-oriented literature, the various aspects can act both as an obstacle and as a benefit with regards to the use of the healthcare system or adequate handling of one's own illness for physicians. In addition, intraindividual and interindividual differences emerged between participants in how they handled the different episodes of illness they reported. In this context, the need for trust and autonomy is of particular importance.<sup>16</sup> The adequacy of the respective behaviour could not be assessed. There may also exist other aspects influencing the illness behaviour of physicians, which could not be detected with our approach. This may be a field for further research.

### Limitations of the study

We examined GPs working in an ambulatory setting. This restriction was necessary for reasons of homogeneity and effort. The transferability of our results to specialists and physicians working in stationary settings is limited and further studies with these groups are necessary.

Some of the elements presented in the respective categories can be found in other categories as well. This partial overlapping resulted from the methodological approach of our study and were also expressed in frequent double or multiple coding in the interview material.

Our study refers to GPs working in and using the German healthcare system. Since the healthcare system differs from those of other countries, there may exist other effects on GPs' illness behaviour in other countries.

Our approach of using the narrative of personal illness episodes is not a direct observational method and may contain distortions. On the other hand, this enabled us to reveal unobservable aspects. In addition, the publication of the study was delayed due to several interruptions in the work process. While there have been developments internationally with, among others, the Quadruple Aim<sup>27</sup> or the amendment of the Geneva Declaration<sup>28</sup> regarding the health of healthcare providers, there have been no fundamental developments in Germany since 2014.

## Conclusion

The illness behaviour of German GPs seems to be comprehensively influenced by their activities as responsible healthcare providers and this represents a crucial difference in relation to general healthcare utilisation models. The ability to perceive and reflect in this regards should already be actively promoted in medical studies and further education. In addition, a more differentiated consideration of the beneficial aspects that result from the medical activity for adequate handling of one's own illness by physicians seems appropriate.

The self-evidence of self-treatment and the widespread use of naturopathy and complementary methods seem to be special features for German GPs. Further research is needed to gain a better understanding of causes and effects.

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**Contributors** SS contributed to the design of the study, the acquisition of participants, the analysis and interpretation of data and drafted the article. He is responsible for the overall content as the guarantor. FH contributed to the design of the study, the acquisition of participants, conducting the interviews, the analysis and interpretation of data, and revised the article. US contributed to the design of the study, the analysis and interpretations of data, and revised the article. FW contributed to the interpretation of data and revised the article. All authors read and approved the final manuscript.

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**Competing interests** None declared.

**Patient and public involvement** Patients and/or the public were not involved in the design, or conduct, or reporting, or dissemination plans of this research.

**Patient consent for publication** Not applicable.

**Ethics approval** This study involves human participants and was approved by Ethics committee of the Friedrich-Schiller-University Jena ID: 4058-04/14. Participants gave informed consent to participate in the study before taking part.

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**Data availability statement** Data are available upon reasonable request. Audio recordings and transcriptions of the analysed interviews are stored on a secure server of Jena University Hospital.

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