

ORIGINAL PAPER

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Short-term training increases diagnostic and treatment rate for insomnia in general practice

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■ **Summary** *Objective* To evaluate the effect of short-term training of general practitioners (GPs) on their diagnosis and treatment of chronic insomnia. *Methods* A three-step randomized control group design was used: After baseline evaluation (T1) a group of 9 GPs underwent a training of half a day, while 7 GPs served as a control group. The diagnostic and therapeutic handling of insomnia patients was reevaluated under obligatory use of a structured diagnostic questionnaire (T2) and under optional use of it (T3). *Results* From 16 general practices, 4,754 patients were included. The frequency rate of insomnia was 19.3%. The lowest diagnostic and treatment rate was found for insomnia patients without comorbidity (15% at T1). Systematic non-pharmacological treatment was not offered by the GPs. At T2 the diagnosis rate increased significantly from 37.9% (T1) to 71.5% (T2, $p = 0.038$). It fell back to lower levels at T3 but remained better than at T1. At T3 non-pharmacological treatments and referral to a sleep expert were advised more often. *Conclusion* Short-term training of GPs can

significantly improve their diagnostic sensitivity and first-line treatment efforts against insomnia.

■ **Key words** insomnia · general medicine · diagnostic · treatment · training

Introduction

Insomnia is a disorder characterized by a quantitative and/or qualitative impairment of sleep. Patients experience at least one of the following complaints: difficulty in initiating or maintaining sleep at night, early morning awakening or non-refreshing sleep. Daytime impairment like tiredness and a reduction in efficiency and concentration are a consequence and may interfere severely with the quality of life (DSM-IV, American Psychiatric Association 1994). The disorder is not only widespread but widely unrecognized as well. Frequency rates of chronic insomnia in general practice range from 19% (Hohagen et al. 1993; Hohagen et al. 1994; Shochat et al. 1999) to 26.5% (Wittchen et al. 2001) applying the DSM-III-R or the DSM-IV criteria, respectively (American Psychiatric Association 1987). The majority of these patients have suffered from insomnia for several years, which seems to have a detrimental impact on health and socio-economic performance (Johnson & Spinweber 1983, Roth 1995, 1996, Von der Schulenburg 1995, Kupfermann et al. 1995, Idzikowski 1996, Hajak 2000, Hajak et al. 2001) at considerable economic costs both to the individual and to society (Walsh et al. 1995, Chilcott and Shapiro 1996, Ustun et al. 1996). As the general practitioner (GP) is usually the first person in the health care system whom patients consult for medical advice and treatment, he/she plays a crucial role in the detection and treatment of insomnia. The GP's diagnostic and therapeutic efficacy thus strongly influences the chances for an early recovery through adequate treatment or set the stage for a chronic course. Unfortunately, the diagnostic rate of insomnia in general practice is very low as yet. It was only 39% in the Mannheim study (Hohagen

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et al. 1993) and the most widely used treatment was the prescription of benzodiazepines, which often were given for longer periods than sleep experts recommend. Such a prescription pattern raises the risk of benzodiazepine dependence. Consequently, it is not just passive appreciation of the patients' complaints that is needed but an active approach by the GP towards a disturbance of considerable socio-economic and mental impact.

In order to improve on the treatment of chronic insomnia, an increase in the diagnostic sensitivity of the GP, an expansion of his knowledge, and perhaps as well of his therapeutic capabilities with respect to insomnia thus seems essential. In our study we therefore explored this issue by evaluating the impact of a short-term training of GPs on their diagnostic competence and treatment of insomnia.

Methods

Planned as a three steps randomized control group design the study was carried out in twenty general practices in Freiburg and Goettingen, Germany. For each study step 100–150 patients per practice were recruited consecutively, depending on practice capacities. All participating patients gave their written informed consent after oral explanation of the study. Of those refusing both age and sex were registered. Four of the originally recruited 20 general practices withdrew from the study after the first study step, one of whom had been randomized to the training group, while the other three had been randomized to the control group. The amount of time required for the study was given as reason for dropping-out. The sixteen remaining general practitioners were included in the further analyses.

■ Step 1

As a first step we investigated the baseline diagnostic and treatment rates of insomnia in the participating general practices using questionnaires for the patients and GPs. The patients were asked about their sleep-wake rhythm, sleep quality, sleep disorders, and daytime functioning. They were asked for their opinion about factors contributing to their sleep problems and about the use of medication and non-pharmacological treatment strategies. Socio-demographic data, satisfaction in their private and occupational lives, stressful life situations during the past year, and their social network were investigated. Based on the answers to this questionnaire, the diagnosis of insomnia was given according to the criteria of DSM-III-R which include: difficulties in falling asleep and/or in maintaining sleep and/or a non-refreshing sleep despite having had enough total sleep time. These problems had to occur at least three times a week for a minimum of four weeks. Additionally, patients had to experience a relevant daytime impairment due to insomnia-like tiredness, concentration problems, impairment of daytime functioning, or mood disturbances. Parallel to the patients, the GPs completed a questionnaire after having seen each patient. They were asked about their patients' acute and chronic illnesses and stated, whether the patients had a sleep disorder, particularly insomnia, or not. These questionnaires were used for calculation of the insomnia diagnostic rates by the GPs. Furthermore, if GPs had diagnosed insomnia in their patients, they had to describe how they treated their insomnia patients and which recommendations they gave to them.

■ Step 2

After the baseline evaluation, the GPs were randomized into two groups: one group underwent training while the other group did not. Given one drop-out in the trained group and three drop-outs in the

untrained group, the analyses were made with nine trained and seven untrained GPs.

The first training session lasted approximately half a day and included information about the different sleep disorders and their diagnostic criteria according to DSM-III-R (American Psychiatric Association 1987). This group was also given a diagnostic guide (LDTS) (Schramm & Hohagen 1993) that consisted of a short, structured guideline for the diagnosis of sleep disorders according to DSM-III-R.

Additionally, the diagnostic guide contained handouts for the insomnia patients which included information about sleep and sleep difficulties, sleep diaries as well as a one-sheet handout with the following briefly explained guidelines for the treatment of insomnia: 1) bedtime restriction (to limit the bedtime and stand up regularly in the morning independent of sleeping time), 2) stimulus control techniques (e.g. not to watch TV in bed, not to eat or drink in bed, etc), 3) sleep hygiene rules 4) relaxation training. The second study step (T2) was carried out after the first training session. The trained GPs were now required to use the LDTS for every participating patient. They were to ask the patient at least whether or not he experienced any sleep difficulties. If patients answered positively, the LDTS was to be used in order to explore the sleep problems in more detail and to make a diagnosis and a decision about treatment. The untrained group of GPs was not given any new instructions. Again, 100–150 patients per practice were recruited and the same questionnaires completed as at T1.

■ Step 3

Prior to the third study step (T3), the trained GPs attended a second training session dealing specifically with insomnia. The focus of this training session was on pharmacological and, particularly, on non-pharmacological, cognitive-behavioral treatment methods. At T3 the GPs were free to diagnose and treat their patients with insomnia at their discretion. The third study step was carried out according to the same evaluation pattern as T1 and T2.

While both training sessions were done by the authors, the data were fed into the computer by students who did not know which of the GPs was trained.

We expected an increase in the diagnostic sensitivity and in the active as well as in the passive (i.e., referrals) approaches towards insomnia from T1 to T2 and from T1 to T3. We expected a particular increase in the diagnostic rate at T2 under the obligatory use of the structured guide, and a particular increase in the treatment efforts at T3 following the training session on insomnia.

■ Sample

Out of 5,116 (i.e., 92.9%) patient questionnaires, 4,754 could be included in the analysis. Patient questionnaires with missing data were excluded since DSM-III-R criteria for insomnia could not be applied. The mean age of the patients was 42.1 ± 15.9 years (range 14–94 years) and 62.5% were female. Of the patients, 35% were single, 50.7% married, 2.3% separated, 7.1% divorced, and 4.9% widowed. Concerning their occupational status, 14.4% were students (school, university or vocational courses), 38.4% had a full-time job, 16.6% a part-time job, 15.8% held no job (housewife or unemployed), and 14.8% were retired.

■ Statistics

The statistical analyses were performed using analyses of variance and t-tests. As the diagnostic rate for the two randomized groups of GPs was significantly different at baseline (the later trained physicians had lower rates) covariance analyses were calculated with the diagnostic rate at the first time point as a co-variable. All tests were calculated with a two-tailed alpha of 5%.

Results

■ Diagnostic rate

The overall average frequency for insomnia according to DSM-III-R was 19.3%, with 20% at the first study step and 18% both at the second and third.

While the untrained control group of GPs did not change significantly compared to baseline, the trained GPs significantly improved in their diagnosis of insomnia after the first training. The rate declined at T3, when the use of the LDTS was no longer obligatory (see Table 1 for the insomnia diagnostic rates of trained and untrained GPs).

Correspondingly, the time x group effect of the covariance analysis with repeated measurement for the diagnosis rate for T2 and T3 (with T1 as a co-variate) was significant ($F = 5.3$, $df = 13, 1, 1$, $p = 0.038$). Separated covariance analyses for T2 and T3 were significant for T2 ($F = 8.62$, $df = 13, 1, 1$, $p = 0.012$) but not for T3 ($F = 0.01$, $df = 13, 1, 1$, $p = 0.933$). The decline from T2 to T3 was in parallel with the application rate of the guide, which had dropped to only 23.4% for the insomnia patients.

Table 1 Diagnostic rates for insomnia in trained and untrained GPs

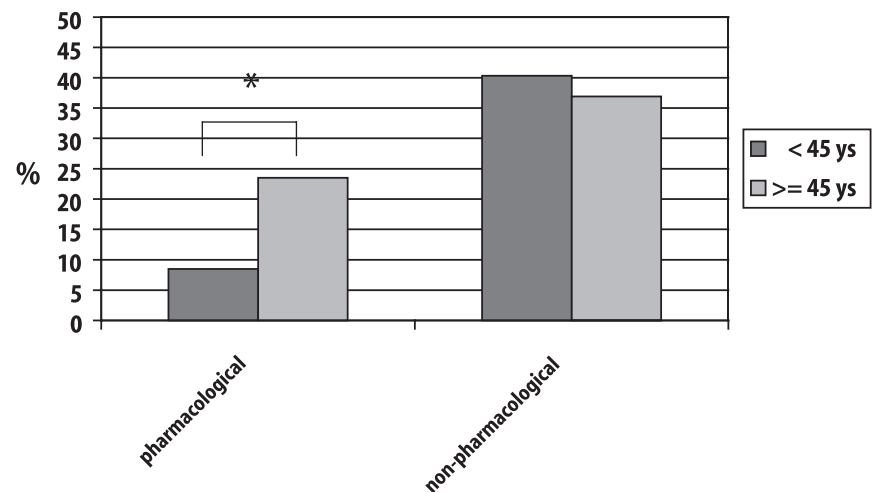
	Trained GPs	Untrained GPs
T1	37.9% (± 14.0)	54.5% (± 15.3)
T2*	71.5% (± 19.5)	40.6% (± 15.7)
T3	56.4% (± 20.0)	59.7% (± 24.7)

* $p = 0.038$ (covariance analysis with T1 as co-variable)

Table 2 Diagnostic rates of insomnia among trained GPs from T1 to T3 for insomniac patients with or without mental comorbidity

	T1	T2	T3	t-test T1-T2 $p =$	t-test T1-T3 $p =$
with comorbidity	58.3 (± 21.5)	84.4 (± 15.9)	73.1 (± 20.6)	0.049	0.180
without comorbidity	15.0 (± 9.4)	67.3 (± 20.2)	36.4 (± 18.4)	0.000	0.001

Fig. 1 Dealing with insomnia in different age groups as stated by insomnia patients at T1.



Despite randomization the average baseline diagnostic rate for insomnia was higher in the untrained group. We therefore restricted our further statistical evaluation to a within-group comparison of the results from T1 to T3 for the trained group.

■ Diagnostic rates for insomnia with and without mental disorder

The GPs diagnosed insomnia in patients with a suspected mental disorder to a much higher degree than in patients without a suspected mental disorder (see Table 2). For both groups the diagnosis rate increased greatly at T2 under the obligatory use of the structured guide. The diagnosis rate dropped again at T3, particularly for those insomnia patients without a mental disorder. Nonetheless, the increase from T1 to T3 for this subgroup remained highly significant.

■ Treatment of insomnia as stated by the insomnia patients

The patients' questionnaires at T1 revealed that over-the-counter and prescribed hypnotics were increasingly used by the elderly insomnia patients (Chi^2 : $p = 0.000$) (see Fig. 1). Non-pharmacological methods were used more frequently by the younger patients, but this difference between the age groups was not significant (Chi^2 : $p = 0.129$). Across the whole sample of patients with insomnia, 21.6% took prescribed hypnotics, 20.1% used over-the-counter hypnotics, and 54.2% reported using

some kind of non-medical strategy to cope with their insomniac complaints. When asked whom they consulted for their insomniac complaints, with multiple answers being possible, 45% of the patients stated that they spoke to their GP or another physician about it, while 13.8% consulted a psychologist, and 2.2% some other specialist. The GPs were thus not the only ones consulted about insomniac complaints.

Concerning non-pharmacological insomnia treatments, patients were asked to write down which measures they used. The answers were then compiled into different categories.

A total of 15.2% of the patients used some kind of relaxation as a sleep promoter but in most cases did not practice a systematic method. The use of some kind of sleep-wake rhythm structuring or sleep hygiene was mentioned by 17.7% of the patients. Reading or listening to music in bed were mentioned by 25.3% of insomnia patients. Eating and drinking during the night as a way of dealing with insomnia problems was mentioned by 7.6%, and other methods such as taking a bath by 8.9%. On the whole, the answers usually gave no hint of a systematic, non-pharmacological treatment.

■ Treatment of insomnia by the GPs

The treatment rate for insomnia was low at T1: only 19.9% of all patients with chronic insomnia received a pharmacological, and only 17.5% a non-pharmacologi-

cal treatment by their GPs. This low treatment rate is a consequence of the low diagnosis rate. Among those patients with recognized insomnia, pharmacological treatment was offered in 53.5%, and non-pharmacological treatment in 41.3% of the cases.

■ Changes in insomnia treatment after training

After the two training sessions in sleep medicine, the recommendation of non-pharmacological treatments increased. At the same time, the pharmacological treatment decreased; however, neither change was statistically significant (see Table 3).

The highest increase in non-pharmacological treatment recommendations after the training sessions was for a referral to other experts like psychotherapists or to a sleep laboratory. A slight increase was found for relaxation and for sleep-wake rhythm restructuring. The 'other measures' like massages decreased (see Fig. 2). None of these changes were statistically significant.

Discussion

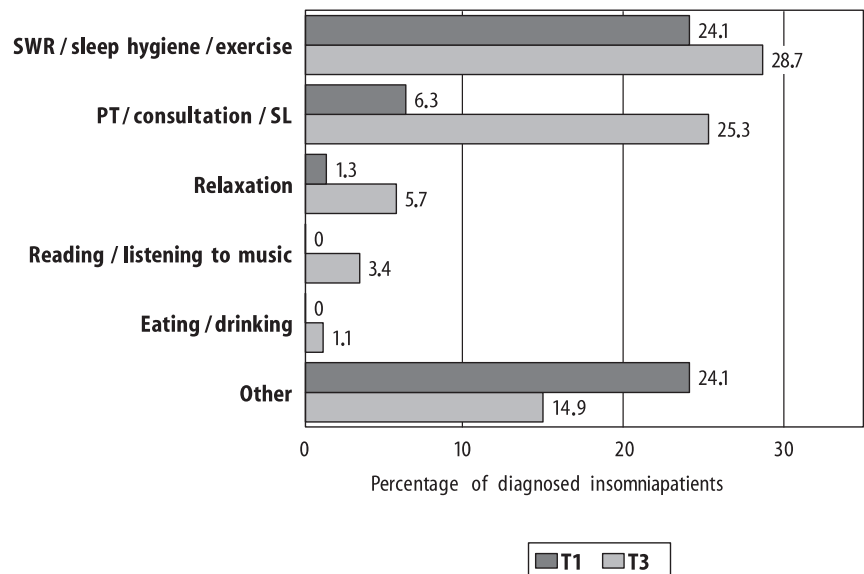
It was the aim of this study to explore the effects of short-term training on the diagnostic and therapeutic rates of GPs regarding their patients with insomnia. The main limitations to our study are the relatively low num-

Table 3 Changes in insomnia treatment by the GPs after training in sleep medicine

	All insomnia patients		Insomnia patients who were diagnosed by their GPs	
	T1	T3	T1	T3
pharmacological	19.9 (± 9.9)	15.3 (± 11.3)	53.5 (± 18.9)	33.0 (± 25.2)
non-pharmacological	17.5 (± 15.3)	29.8 (± 23.8)	41.3 (± 26.6)	52.0 (± 29.5)

Fig. 2 Non-pharmacological methods recommended by the trained GPs

SWR Sleep Wake Rhythm Structuring; PT Psychotherapy; SL Sleep Laboratory.



ber of participating GPs and the baseline difference between the two groups with respect to their rate of diagnosed insomnia despite randomization. This difference was due to some GPs among the untrained group who were very sensitive to sleep disorders. The untrained group could thus only restrictedly serve as a control group. In contrast to the trained GPs the untrained group showed no significant improvement from T1 to T2 or T3, however.

The average frequency of about 19% patients with insomnia according to the criteria of DSM-III-R was rather stable across all study steps and almost identical to the rate found in our previous study in another German city (Hohagen et al. 1993). It must be borne in mind that this rate encompasses different insomnia diagnoses, like primary insomnia, insomnia due to psychic comorbidity, and insomnia due to organic disorders.

The main findings of our study are

- Untrained GPs failed to diagnose and treat the majority of their patients with chronic insomnia.
- The lowest diagnosis rate was found for insomnia patients without any mental comorbidity.
- A systematic, non-pharmacological treatment was not offered.
- The diagnosis rate increased significantly after a short-term training in sleep medicine and through the use of a structured diagnostic guide (LDTS).
- The improved knowledge about insomnia was paralleled by an increase in treatment efforts, which consisted mostly of a referral to a sleep expert.
- The training in pharmacological and non-pharmacological treatment of insomnia led to an increased use of non-pharmacological strategies.

The reason for the drop of the diagnostic rate at T3 was probably due to the diminished use of the LDTS. This diminished use, in turn, was justified by the GPs with the increased and not financially compensated effort its use would have meant.

The GPs rarely approached the problem of insomnia actively. There seems to be a gap between the evidence of effective insomnia treatments on the one hand and the majority of insomnia patients who do not receive adequate treatment on the other. While several studies could demonstrate the effectiveness of both pharmacological and non-pharmacological insomnia therapies in the short run (Nowell et al. 1997, Smith et al. 2002), the long-term benefits were proven mostly for non-pharmacological cognitive-behavioral therapies (Morin et al. 1994, Murtagh & Greenwood 1995, Backhaus et al. 2001). Despite the evidence for the effectiveness of non-pharmacological methods, the GPs abstained in particular from recommendation or application of these treatments. This can be due to several reasons:

- a) GPs may not have enough knowledge and/or not feel competent in using and supervising these strategies
- b) GPs may not have enough time for diagnosis and treatment, and
- c) GPs may not receive reasonable compensation for

consulting in non-pharmacological methods dealing with insomnia.

With respect to a) our data show that short-term training in insomnia considerably improves the level of knowledge and along with this, the diagnostic competence of GPs. The improvement is even greater if a structured guide on insomnia is used additionally. Our data at T3, where the trained GPs hardly made use of the LDTS, may be a reflection on b) and c). The increase in referrals to other experts like psychotherapists or to a sleep laboratory seem to point in the same direction. But the data may also indicate the necessity of increasing training-time in order to improve on time effectiveness.

An increase in the diagnostic rate of insomnia is a prerequisite for adequate treatment but it is not sufficient to improve treatment. Early and adequate insomnia treatment seems to be very important since several studies revealed that patients with chronic persistent insomnia are at higher risk for other psychiatric disorders, especially depression, anxiety disorder, or alcoholism, than patients without insomnia or those who have recovered from it (Ford & Kamerow 1989; Livingston et al. 1993; Breslau et al. 1996; Weissman et al. 1997; Chang et al. 1997). Our trained GPs preferred to refer insomnia patients to a specialist rather than to offer adequate first-line treatment themselves. Because of the high insomnia frequency rate, it is unrealistic, however, to expect that all insomnia patients be treated by a sleep expert. Since the GP is the first person in the health care system to be contacted, he should be able to diagnose sleep disorders and give some adequate first-line help. As our study shows, an improvement of first-line treatment in primary care is necessary. Taking the aspects b) and c) into account, an improvement might be achieved via the reinforcement of self-management by insomnia patients. Some studies show the effectiveness of self-help manuals (Alperson & Biglan 1979; Morawetz 1989; Mimeault & Morin 1999; Riedel et al. 1995) though not in the setting of a general practice. These manuals could be handed out to insomnia patients by GPs trained in the diagnosis and treatment of insomnia. Even if GPs themselves thus would not offer cognitive-behavioral treatment to insomnia patients, they could supervise the self-management of patients without much effort and refer non-responding patients to sleep experts. However, the effectiveness of such an approach in general practice still needs evaluation. An alternative and very promising approach (Espie et al. 2000) is outpatient group therapy through trained nurses.

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