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Psychosocial aspects of insomnia
Results of a study in general practice

■ **Abstract** The relationship between insomnia and psychosocial factors is focused only in few epidemiological studies. Furthermore, most of them do not control for the mutual interdependencies of variables like age, sex, psychosocial distress and somatic or psychiatric disorders in their relation to insomnia. From a sample of general practice attendants, 516 patients with different grades of insomnia diagnosed according to DSM criteria were selected.

Logistic regression analysis revealed seven psychosocial factors with independent predictive value for the occurrence of insomnia: increased age, conflicts with relatives, professional overload, housekeeping overload, illness of relatives, social and psychiatric status.

Based on such a risk profile, in more than 2/3 of the cases the presence of insomnia can be predicted correctly. Consequences for diagnostic training and multimodal treatment programs are suggested.

■ **Key words** insomnia · psychosocial factors · logistic regression · general practice

Introduction

Epidemiological studies have indicated that insomnia is a common health problem. It affects about 15 % to 35 % of the population [3, 5, 15, 17, 21, 32], showing higher prevalence rates in general practice samples than in general population surveys [27]. The relatively few epidemiological studies that included psychosocial factors support the assumption that insomnia may be associated with low income, poor educational status and industrial work [3, 17]. Furthermore, a relation between insomnia and professional status was reported [3, 29]. Insomnia has also been found to be associated with other health problems [14, 25], psychological problems [8, 15] and trouble in one's family or social life [13, 31]. Nevertheless, most of these studies neither control confounding variables like age and sex, and somatic and psychiatric disorders nor the mutual interdependencies among these variables. Furthermore, a comparison of single investigations is difficult, as in general no operationalized diagnostic criteria were applied to assess the diagnosis of insomnia [17, 21].

The present study was conducted within the framework of an extensive research program in which we examined the prevalence and treatment of insomnia in general practice [9–11]. The analysis in the present paper aims at investigating the relation between insomnia on the one hand, and psychosocial factors reported by the patients as well as somatic and psychiatric disorders diagnosed by the general practitioner on the other.

Subjects and methods

The survey was performed in the consulting-rooms of ten general practitioners in the Mannheim area, where 2,512 patients (18–65 years of age, 56.3 % up to 45 yrs, 43.7 % over 45 yrs, 55.3 % females, 44.7 % males) were investigated. Compared with the general German population in 1987 (50.02 % females, 49.98 % males), male and younger individuals (up to 45 yrs) were slightly underrepresented, whereas older patients (over 45 yrs) corresponded well. A questionnaire specifically developed for this study was distributed consecutively to all patients by the receptionists. To avoid a selection bias, a maximum of 300 patients per practice were investigated during a study period of four months (for further information about the entire study see [9]). The patients were asked about their sleeping habits and problems. Additionally, patients were asked about psychosocial or somatic stressors within the six months preceding the survey, i. e.

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surgery or illness; severe illness or handicap of children, partner or other close relatives; conflicts with their partner, parents, children or brother/sister; conflicts with neighbors or other persons; housekeeping overload or professional overload. Furthermore, patients gave information about what they thought to be possible causes of their sleep problem: worries about daytime events, personal problems, professional problems, significant life events, care of children or relatives, noise pollution or own somatic disorder.

Insomnia was assessed by questions about the difficulties of initiating or maintaining sleep, early morning awakening, sleep-related impairment of daytime functioning and well-being. Operationalized diagnostic criteria were applied to assess the diagnosis of insomnia, classified according to its severity as:
(1) no insomnia,
(2) mild insomnia (occasional difficulties in initiating and maintaining sleep),
(3) moderate insomnia (this category fulfilled diagnostic criteria of insomnia according to DSM-III-R without reporting impairment of daytime functioning), and
(4) severe insomnia (this category fulfilled diagnostic criteria of insomnia according to DSM-III-R [1]).

Furthermore, the general practitioners were requested to report on the presence of a somatic and/or psychiatric disorder. The diagnosis of a psychiatric disorder was established according to a list including all mental disorders F 0 – F 6 (ICD-10, [6]). To avoid splitting the diagnoses into too many small subgroups, somatic and psychiatric diagnoses were each taken as an entire diagnostic group.

■ Statistics

As all data are frequencies of categorical variables, cross tabulations were used in order to assess the relation between two variables. To evaluate the degree of relationship between two variables, the contingency coefficient was computed. Accounting for the interdependencies between psychosocial variables, and somatic and psychiatric dis-

orders in relation to the occurrence of insomnia, logistic regression analyses were conducted [12]. For all results p ≤ 0.05 was required for statistical significance.

Results

From the initial sample of 2,512 patients only those patients for whom complete data sets were available (i. e. without any missing data) were included in the analysis (n = 945). 258 of them suffered from severe/moderate insomnia. Since the logistic regression is very sensitive to an unequal distribution of the criterion (in the present study: insomnia), we randomly selected 258 additional patients from the group of non/mildly insomniac patients (n = 687). Thus, the analysis includes a total sample of 516 patients. This sample did not differ significantly from the initial sample regarding the relevant socio-demographic characteristics, e. g. sex and age distribution.

In the first step of analysis, contingency coefficients were separately computed between insomnia on the one hand and each item of demographic data, psychosocial stressors and factors regarded as causes of insomnia by the patients on the other (Table 1, first column). Furthermore, the relation between these variables and other factors discussed as being important for the occurrence of insomnia in the literature – i. e. sex, age, social status, and somatic and psychiatric disorders – is shown in

Table 1 The association between insomnia and psychosocial (predictor) variables including critical interdependencies

	Insomnia	Sex	Age (groups)	Social status	Somatic disorder	Psychiatric disorder
Demographic variables						
Fully employed	0.06	0.45***	0.07(*)	0.17***	0.08(*)	0.00
Housewife	0.04	0.43***	0.00	0.05	0.00	0.04
Unemployed	0.06	0.07	0.08(*)	0.03	0.04	0.05
Retired	0.04	0.04	0.05	0.07	0.03	0.09*
Shift-work	0.08(*)	0.19***	0.03	0.15***	0.03	0.05
Causes of insomnia reported by the patients						
Daytime events	0.10(*)	0.06	0.09	0.01	0.05	0.07
Personal problems	0.03	0.17***	0.26***	0.17**	0.01	0.18**
Professional problems	0.08	0.03	0.19**	0.03	0.09	0.10
Life events	0.02	0.13*	0.15*	0.06	0.07	0.03
Care of relatives	0.11(*)	0.18**	0.05	0.08	0.02	0.03
Noise	0.06	0.00	0.05	0.04	0.00	0.09
Psychosocial stressors within the last six months reported by the patients						
Illness/surgery	0.12**	0.06	0.06	0.03	0.11*	0.15***
Illness of relatives	0.10*	0.12**	0.09*	0.03	0.07	0.08(*)
Conflicts with relatives	0.18***	0.08(*)	0.11*	0.08(*)	0.04	0.10*
Conflicts with others	0.09*	0.07	0.04	0.10*	0.07	0.09*
Overload Housekeeping	0.17***	0.21***	0.07	0.09(*)	0.00	0.12**
Overload Profession	0.19***	0.15***	0.00	0.06	0.03	0.14**

Contingency coefficients
N(max) = 516 subjects
(*) p ≤ 0.10 (tendency); * p ≤ 0.05; ** p ≤ 0.01; *** p ≤ 0.001

Table 1 (columns 2–6). Table 1 illustrates that highly significant associations were found between insomnia and several psychosocial variables. At the same time, many of the variables significantly associated with the occurrence of insomnia are also related to sex, age, social status, and to somatic and psychiatric disorders. Thus, the analysis exclusively based on contingency coefficients cannot elucidate the contribution of each of these variables to insomnia as many of them show mutual interdependencies.

For this reason, in a second step several logistic regression analyses using insomnia as the criterion-variable were separately conducted for each of the psychosocial variables displayed in Table 1, taking into account the influence of sex, age, social status and somatic and psychiatric disorders. Thus, the procedure indicates the predictive value of each of these variables for the occurrence of insomnia, considering the interdependency with other potentially confounding variables.

The third step of the analysis included only variables, which have been identified to have an incremental value for insomnia in the logistic regression analysis: conflicts with relatives, illness/surgery of relatives, overload in housekeeping and profession, age, social status and psychiatric disorders. Table 2, displaying the rank order according to the R-values, shows that age, conflicts with relatives and professional overload show the strongest predictive values. The log-odds ratio indicates the increased probability (as a multiplicator) of insomnia when the respective variable is present.

In the last step of our analysis we investigated the percentage of insomnia patients that could be predicted by the computed logistic regression model. Table 3 shows that in more than 2/3 of the cases the model predicted whether or not the patient suffered from insomnia. When all seven variables, which have been shown to have predictive power for insomnia, were present, 65.1 % of the patients were correctly identified as insomniacs. Conversely 72.1 % of the patients were correctly identified as not suffering from insomnia when these seven variables were absent.

Discussion

Relatively few studies have investigated the relationship between insomnia and psychosocial factors. And the ones, which focused on this topic, did not control reciprocal relations of those variables like age, sex, and somatic and psychiatric disorders, as well as psychological distress caused by a variety of factors. The present study aimed at investigating the mutual interdependence of these factors in relation to insomnia by applying logistic regression analysis.

The most powerful predictors for insomnia were age, conflicts with relatives, professional overload, housekeeping overload, presence of a psychiatric disorder, illness or surgery of relatives and social status. The association between insomnia and increasing age is in accordance with other epidemiological studies [13, 26, 30]. Furthermore, the relationship between psychosocial distress like trouble in one's family or social life [8, 30, 31] and work overload [15, 29] corresponds with the literature. The comorbidity of insomnia with depression was also confirmed in several studies [24, 28, 31].

Female sex has been described as a risk factor in almost all studies [9, 26, 32]. However, in our analyses, gender was not significantly correlated with insomnia when other confounding variables were taken into account. This can be explained by the fact that the presence of a psychiatric disorder – which in our sample is mainly major depression and/or anxiety disorders [9, 10, 24] – or the presence of psychosocial stressors can predict insomnia better than female sex as a single factor. This result may indicate that female sex per se is not related to insomnia, and that the higher prevalence of insomnia among females is due to the comorbidity with psychiatric disorders, professional stressors, and to conflicts with relatives or housekeeping overload. Thus, studies on sex-related differences among insomnia patients should control psychiatric disorders and other psychosocial factors. It is important to mention that the results of the present study referring to these factors merely indicate (cor-)relations with insomnia and cannot prove causal pathways which will be only possible through longitudinal designs.

Two practical clinical consequences, however, can be drawn from the results of our study. First, an "insomnia risk profile", which includes the variables age, interpersonal conflicts, psychiatric and social status, professional and housekeeping overload, and illness of relatives, which predicted the presence of insomnia correctly in about 2/3 of the cases, may be useful to achieve the diagnosis of insomnia within the primary

Table 2 The result of the logistic regression analysis

	B weight	p	R	log-odds ratio
Age (group)	1.07	0.0000	0.19	2.9
Conflicts with relatives	1.04	0.0002	0.13	2.8
Overload profession	0.86	0.0003	0.13	2.4
Social status	−0.71	0.0009	−0.11	0.5
Psychiatric disorder	0.71	0.0074	0.09	2.0
Overload housekeeping	0.89	0.0152	0.07	2.4
Illness/surgery of relatives	0.54	0.0429	0.05	1.7

Table 3 The predictive power of the regression model

		insomnia 'predicted'		percent correctly predicted
		no	yes	
Insomnia	no	186	72	72.1 %
'observed'	yes	90	168	65.1 %
			overall:	68.6 %

health care setting. This is of special importance since general practitioners fail to recognize insomnia in the majority of the cases, despite the frequent occurrence of sleeping problems [2, 17].

Second, the impact of psychological distress related to insomnia suggests a need for therapeutic consequences. The effectiveness of nonpharmacological treatment programs for insomniac patients, focusing on insomnia complaints on the one hand, and on stress management and problem-solving on the other, has been proven in several studies [7, 19, 20, 23]. Specialized treatment programs for insomniac patients may improve the quality of insomnia treatment in the health care system and change the attitude of general practitioners, who often regard drug prescription, especially of benzodiazepines, as the treatment of first choice despite chronic insomnia [5, 22]. Therefore, special training programs [16] on the diagnosis and treatment of insomnia for students and practitioners of medicine and psychology should include psychosocial aspects of insomnia.

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