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Original article

Global sleep dissatisfaction for the assessment of insomnia severity in the general population of Portugal☆

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Abstract

Background and purpose: This study examines the prevalence and associated factors of insomnia symptoms and sleep dissatisfaction in the general population of Portugal.

Patients and methods: We interviewed by telephone 1858 participants aged 18 years or older and representative of the general population of Portugal using the Sleep-EVAL system. Participation rate was 83%. The questionnaire included the assessment of sleep habits, insomnia symptomatology according to DSM-IV and ICSD classifications, associated and sleep/mental disorders and daytime consequences.

Results: Insomnia symptoms occurring at least 3 nights per week were reported by 28.1% of the sample and global sleep dissatisfaction (GSD) by 10.1%. Difficulty maintaining sleep was the most frequent symptom (21.0%); 29.4% of subjects with insomnia symptoms reported GSD. Daytime consequences, medical consultations for sleep and use of sleep medication were at least 2 times more frequent among subjects with insomnia symptoms and GSD compared to subjects with insomnia symptoms without GSD; insomnia diagnoses were also more frequent in the GSD group.

Conclusions: The results show a severity gradation among subjects with only 1 insomnia symptom, those with 2 or 3 insomnia symptoms but without GSD and those with at least 1 insomnia symptom and GSD. Specific sleep or psychiatric disorders were identified for the majority of GSD subjects (86%); this rate dropped to 50.6% when only 1 insomnia symptom without GSD was reported. GSD appeared to be a good indicator of the presence of a sleep or psychiatric disorder and a good discriminator of the severity of sleep disturbances among subjects with insomnia symptoms.

Keywords: DSM-IV classification; Epidemiology; Insomnia consequences; Insomnia symptoms; Insomnia diagnosis

1. Introduction

Insomnia symptoms have been studied frequently in the general population of Western Europe and North America [1], although few of these studies have provided national figures [2–7] on the prevalence of these symptoms. The reported prevalence of insomnia symptoms ranged from 10 to 48%, depending on the study [1]. Nevertheless, these studies have provided valuable information on health problems in subjects with insomnia symptoms [5–9] such as obstructive airway diseases (asthma, chronic bronchitis) [8,9], rheumatic diseases and non-treated hypertension [10]. Other epidemiological studies have investigated the occurrence of mental disorders in relationship with insomnia symptoms with the use of anxiety or depression scales [11,12]. Participants with insomnia symptoms scored higher on these measures than did those without. A high co-occurrence of insomnia symptoms and mental disorders was also reported in the general population [4,5,13,14].

Insomnia has different meanings depending on the clinical symptoms presented by the subject. It can be a complaint (related to sleep quantity or quality) reported by the subject, a symptom (part of a sleep, mental or an organic disorder) or a sleep disorder diagnosis (primary or secondary) implying

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the need for a differential diagnosis process. This distinction has been attempted in some epidemiological studies [4–7,15]. The clinical symptoms of insomnia, as described by the classifications, apply to a large number of the general population. However, it is unlikely that all these individuals suffer from insomnia [16]. Previous studies have indicated that sleep dissatisfaction could be a better indicator of sleep pathology than insomnia [5–7,16].

This report aims to document the prevalence of insomnia in the general population of Portugal and to verify if sleep dissatisfaction is more closely related to a pathology than insomnia symptoms alone.

2. Methods

2.1. Sample

Individuals from Portugal were interviewed by telephone about their sleeping habits, sleep symptoms and mental health status from June 8 to September 5, 1998. The target population included all non-institutionalized inhabitants 18 years of age or older (8,300,000 inhabitants). A representative sample was drawn according to the geographical distribution of the population, the age and gender. For this purpose, a 2-stage design was used. First, telephone numbers were randomly pulled according to the size of the 5 regions of Portugal (Norte, Centro, Lisboa e vale do tejo, Alentejo and Algarve). Second, the Kish selection procedure [17], a controlled selection method, was applied to maintain the representation of the sample according to age and gender. It allowed for the selection of 1 respondent in the household. If the member chosen by the Kish refused to participate, the household was classified as a refusal and another telephone number in the same area was used, and the process repeated.

Verbal consent was obtained before interviewing the subjects. Individuals with insufficient fluency in Portuguese, with a hearing or speech impairment or with an illness precluding the feasibility of an interview were excluded. Similarly, telephone numbers that went unanswered after a minimum of 10 unsuccessful dial attempts (performed at different times and on different days, including weekdays and weekends) were dropped and replaced by another telephone number from the same area. An added-digit technique, that is, increasing the last digit of a number by 1, was employed to control for unlisted telephone numbers. The final sample included 2.4% of unlisted telephone numbers. The participation rate was 83% (1858 of 2234 eligible subjects). The study was approved by the ethical and research committee of the Hospital de Sta. Maria (Lisbon, Portugal).

2.2. Instrument

Lay investigators performed the interviews using the Sleep-EVAL system [18,19]. Sleep-EVAL is specially designed to conduct epidemiological studies of sleep habits and sleep and mental disorders in the general population.

Interviews typically begin with a standard questionnaire composed of sociodemographic information, sleep/wake schedule, physical health, and a series of questions related to sleep symptoms and mental disease symptoms. From the answers provided on these questions, the system elicits a series of diagnostic hypotheses (causal reasoning process) that are confirmed or rejected through further questioning and by deductions of the consequences of each answer (non-monotonic, level-2 feature). The system allows concurrent diagnoses in accordance with the Diagnostic and Statistical Manual of Mental Disorders, fourth edition (DSM-IV) [20] and the International Classification of Sleep Disorders (ICSD-90) [21] classifications. The differential diagnosis process is based on a series of key rules allowing or prohibiting the co-occurrence of 2 diagnoses in accordance with the classifications implemented in the system. The interview ends once all diagnostic possibilities are exhausted.

Validation studies were conducted with 105 patients at the Sleep Disorders Centers at Stanford University (USA) and at Regensburg University (Germany) and with 72 patients at the Toronto Hospital. Patients attending the Sleep Disorders Centers were interviewed twice: (1) by a physician using the Sleep-EVAL system, who was blind to the diagnoses given by the Sleep-EVAL system; and (2) by a senior sleep specialist clinician using his or her clinical experience and polysomnography (PSG) results. This specialist also was blind to the diagnoses made by the Sleep-EVAL system. The Sleep-EVAL diagnoses were later compared to those of the sleep specialists. Kappa for obstructive sleep apnea syndrome (after polysomnographic examination) was at least 0.92 and at least 0.71 for any insomnia diagnosis between sleep specialists and the Sleep-EVAL Expert System [22,23].

The duration of interviews ranged from 30 to 223 min (mean 56.2 ± 29.7 min). The longest interviews involved subjects with sleep disorders associated with mental disorders. Interviews were completed over 2 or more sessions if the duration of a session exceeded 60 min.

2.3. Variables

Complaints were assessed throughout a reported severity of global sleep dissatisfaction (GSD), in subjects moderately or completely dissatisfied with their sleep quality or quantity [6,24]. The wording of most questions can be found elsewhere [24].

The symptoms of insomnia were also evaluated and defined as followed:

DIS: Difficulty in initiating sleep at least 3 evenings per week (being quite or completely dissatisfied with sleep latency (at least 30 min) or reporting long sleep latency at sleep onset as a major sleep problem);