Loss of productivity, use of healthcare resources and cost associated with chronic insomnia

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EE39

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OBJECTIVES

Insomnia is the most common sleep disorder in the general population and one of the most common reasons for consultation in clinical practice[1,2] affecting patients 24 hours a day. If the insomnia lasts for a long time and is continuous, it is called chronic insomnia. The Diagnostic and Statistical Manual of Mental Disorders (DSM-5) defines chronic insomnia as difficulty initiating, maintaining or returning to sleep after awakening, occurring three times per week for at least three months and associated with clinically significant distress and impairment in social, occupational, educational, academic, behavioural or other important areas of functioning[3].

According to the latest published prevalence data, chronic insomnia in Spain is 14%[4]. However, on a global scale, epidemiological studies estimate that 6-10% of the general population suffers from chronic insomnia[5,6], imposing a great burden on patients' lives and triggering social and economic problems.

Chronic insomnia is associated with increased direct health costs (medical costs related to treatment, morbidity and mortality) and indirect health costs (reduced work productivity and increased absenteeism)[5,7,8].

We aim to assess productivity losses, use of healthcare resources and costs (direct and indirect) associated with chronic insomnia in Spain.

METHODS

Cross-sectional observational study based on a national electronic questionnaire of an adult population (18-70 years) who meet chronic insomnia criteria (have problems initiating/maintaining/conciliating sleep at least 3 times/week during the last 3 months, unrelated to another medical condition/circumstance). Sociodemographic (sex, age, employment status, marital status and the presence of children), clinical (chronic insomnia diagnosis, time since onset of sleep problems, from onset of sleep problems to diagnosis of chronic insomnia and since diagnosis of chronic insomnia), and productivity and healthcare-resource use data were collected. To estimate the costs associated with the use of health care resources the frequency of use of each service was multiplied by its unit cost[9]. Indirect costs were estimated by multiplying the hours lost in the last 12 months by the cost of one hour[10], and pharmacological costs were estimated by multiplying the cost per pill by the time received (days) (the costs associated with each treatment were obtained from the database of the *Consejo General de Colegios Oficiales de Farmacéuticos*[11]). The Ethics Committee for Research on Medicinal Products (ECRm) of the Hospital Universitario 12 de Octubre (Community of Madrid) approved the study. A descriptive analysis was performed (STATA v.14).

RESULTS

A total of 1,504 individuals responded to the questionnaire, of whom 700 (46.5%) meet chronic insomnia criteria. Only 4.9% (n= 34) had a diagnosis of chronic insomnia. Sociodemographic characteristics are shown in Table 1.

Table 1. Sociodemographic characteristics of the population

	Chronic Insomnia related population (n= 700)
Sex (n, %)	
Male	312 (44.6%)
Female	388 (55.4%)
Age (mean, SD)	44.0 (13.4)
Employment status (n, %)	
Employed (employee)	467 (66.7%)
Student	60 (8.6%)
Self-employed or freelance	58 (8.3%)
Pensioner	57 (8.1%)
Unemployed	53 (7.6%)
Unpaid worker	28 (4.0%)
Marital status (n, %)	
With a partner	487 (69.6%)
Single	155 (22.1%)
Separated or divorced	48 (6.7%)
Widowed	6 (0.9%)
Other	4 (0.6%)
Children (n, %)	
Yes	412 (58.9%)
No	288 (41.1%)
Time since onset of sleep problems (months) (mean, SD) (n=700)	47.1 (70.0)
Medical diagnosis of chronic insomnia (n, %) (n= 700)	34 (4.8%)
Time from onset of sleep problems to diagnosis of chronic insomnia (months) (mean, SD) (n= 34)	27.5 (51.5)
Time since diagnosis of chronic insomnia (months) (mean, SD) (n= 34)	67.9 (84.9)

SD: Standard deviation

During last year, 33.0% of workers (n=172) with chronic insomnia required medical leave; a mean (standard deviation, SD) of 7.7 (32.8) insomnia-related days off work; 12.3% had to change or quit their job/studies due to chronic insomnia. Absenteeism, presenteeism, work impairment and disability due to chronic insomnia, according to the Work Productivity and Activity Impairment Questionnaire (WPAI), are shown in Figure 1.

In the past 12 months, 51.9% required some form public and 23.9% private healthcare services. The percentage of use of each specialty in public and private services is shown in Figure 2.

Non-pharmacological treatment (47.9%) and pharmacological treatment (41.6%) or a combination of the two were used to treat chronic insomnia. Within the non-pharmacological treatment, the most used were sleep hygiene measures (26.7%), relaxation exercises (20.3%) and meditation (12.0%). Within pharmacological treatment, the most used were benzodiazepines (15.9%) and antidepressants (5.4%).

Figure 1. WPAI questionnaire scores in active workers' population with chronic insomnia

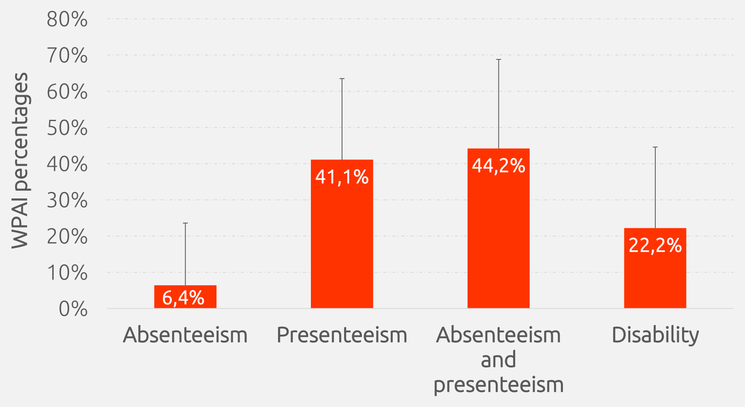
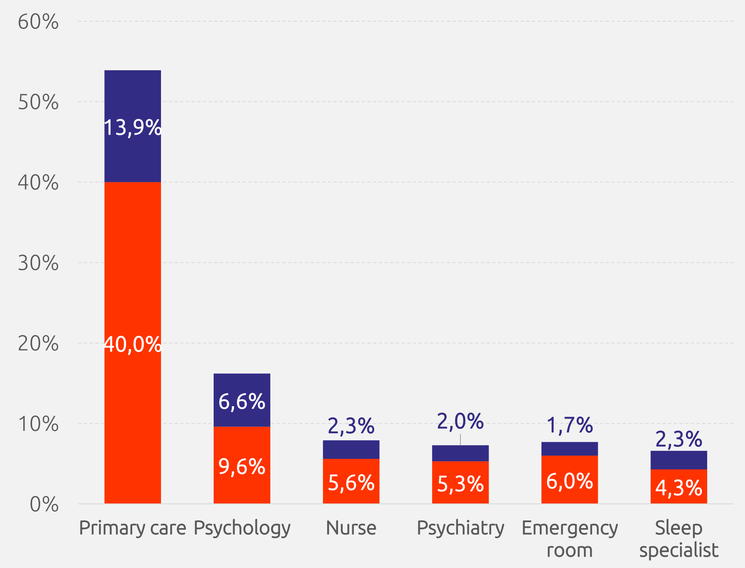


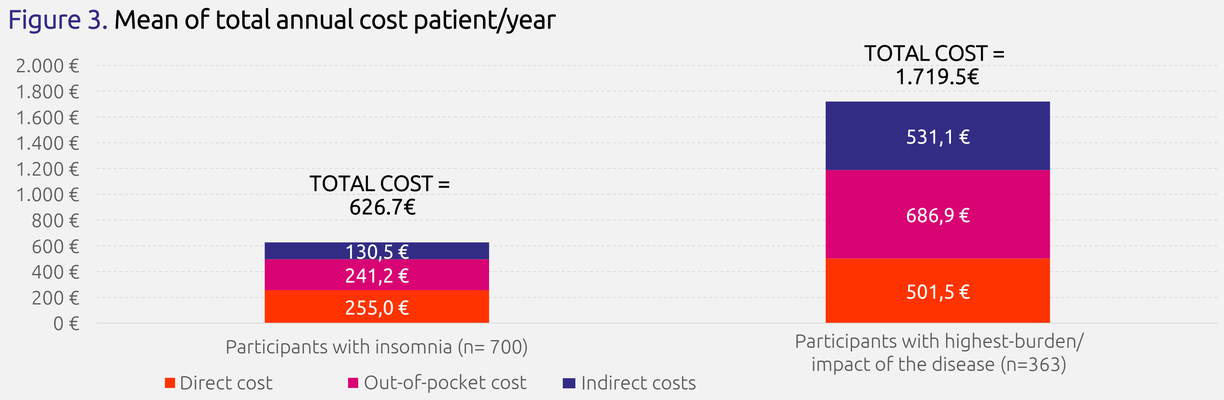
Figure 2. Use of public and private health services related to chronic insomnia



The mean (SD) total annual cost of the total population with chronic insomnia-related problems (n= 700) was €626.7/patient per year, including direct costs related to the use of public health resources and pharmacological costs (€255.0), out-of-pocket costs (€241.2) and indirect costs incurred from the reduction of work productivity (€130.5) (Figure 3).

Considering only those study participants with the highest-burden or impact of the disease (those who required at least one health service, medication or reduced work productivity [n= 363]), the mean of the total annual cost reached €1719.5/patient per year, including direct costs related to the use of public health resources and pharmacological costs (€501.5; 8.5% with chronic insomnia diagnosis), out-of-pocket costs (€686.9; 7.2% with chronic insomnia diagnosis) and indirect costs incurred from the reduction of work productivity (€531.1; 9.3% with chronic insomnia diagnosis) (Figure 3). Considering the average cost and the prevalence of insomnia (14%)[4], the total cost of insomnia in Spain is estimated in €3,458 million. A previous study found a higher cost, (especially in relation to indirect costs). Nonetheless, the labour productivity was reported subjectively by the patients themselves without using a validated tool, which could have resulted in an overestimation of the indirect cost. Moreover, other costs such as transport or alcohol consumption were also include[12].

Figure 3. Mean of total annual cost patient/year



CONCLUSIONS

Insomnia is under-diagnosed and leads to work productivity loss, mainly associated with presenteeism and out-of-pocket costs. Proper diagnosis and treatment would contribute to reducing the economic impact of insomnia.

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