



Original Article

Workplace Accidents, Absenteeism and Productivity in Patients With Sleep Apnea[☆]

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ABSTRACT

Introduction: Obstructive sleep apnea-hypopnea syndrome (OSAHS) has health-related outcomes, but the impact of OSAHS on occupational health has been scarcely studied. The aim of this study was to evaluate the effect of OSAHS on workplace accidents, absenteeism and productivity.

Method: One hundred eighty-two OSAHS patients and 71 healthy subjects completed the Epworth Sleepiness Scale, the Pittsburgh Sleep Quality Index and the Spanish IMPALA (*Impact of Disease on Work Productivity*) index and answered various questions on workplace accidents and sick leave. Participants were classified to an OSAHS group or a non-OSAHS group according to polysomnography results.

Results: Patients with OSAHS had more sick leave lasting longer than 30 days (16.6% vs 7%, $P=.049$) and lower productivity (63.80% vs 83.20%, $P=.000$) than subjects without OSAHS, although the rate of workplace accidents was similar in both groups (27.4% vs 25.4%; $P>.050$). None of the OSAHS-related variables were associated with workplace accidents. A diagnosis of OSAHS was related with absenteeism. Psychological distress and OSAHS were related with productivity.

Conclusions: OSAHS causes limitations in the working lives of patients and leads to a higher incidence of sick leave and lower productivity. A diagnosis of OSAHS was the variable with most influence on the working lives of patients.

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Accidentes laborales, absentismo y productividad en pacientes con apneas del sueño

RESUMEN

Introducción: El síndrome de apneas-hipopneas del sueño (SAHS) provoca consecuencias sobre la salud, pero el impacto del SAHS sobre la salud laboral ha sido escasamente estudiado. El objetivo fue evaluar la influencia del SAHS en la presencia de accidentes laborales, absentismo y productividad laboral.

Método: Un total de 182 pacientes con SAHS y 71 personas sin SAHS contestaron a la escala de somnolencia de Epworth, el índice de calidad de sueño de Pittsburgh, el índice de impacto de la enfermedad en la productividad laboral y algunas preguntas sobre la frecuencia de accidentes laborales y el número de días de bajas laboral por enfermedad. Los participantes fueron clasificados mediante polisomnografía en un grupo con o sin SAHS.

Palabras clave:

Síndrome de apnea-hipopnea del sueño

Accidentes laborales

Días de baja

Productividad laboral

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Resultados: Los pacientes con SAHS presentaron más bajas laborales > 30 días (16,6% vs 7%; $p=0,049$) y una menor productividad laboral (63,80% vs 83,20%; $p=0,000$) respecto a las personas sin SAHS, aunque la proporción de accidentes laborales fue similar (27,4% vs 25,4%; $p>0,05$). Ninguna de las variables asociadas al SAHS se relacionó con los accidentes laborales. Se evidenció una asociación entre el absentismo y el diagnóstico de SAHS, y entre este último, el estrés psicológico y la productividad laboral.

Conclusiones: El SAHS provoca limitaciones en la vida laboral de los pacientes, con un número más elevado de bajas laborales y una menor productividad. El diagnóstico de SAHS fue la variable con mayor influencia en la vida laboral de los pacientes.

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Introduction

Obstructive sleep apnea-hypopnea syndrome (OSAHS) is a very common respiratory disorder in industrialized societies, and occurs in 24% of men and 9% of women in middle age.¹ It consists of repeated episodes of limited airflow or airflow blockage during sleep causing micro-awakenings and intermittent hypoxemia. It has a serious impact on health,² causing hypertension³ and cardiovascular disease.^{4,5}

OSAHS patients often present significant cognitive limitations⁶ and a generally poorer quality of life.⁷ Obesity and poor quality of rest, which are often seen with this disorder, are associated with mood disorders such as anxiety and depression.⁸ However, one of the most debilitating symptoms of this syndrome is excessive daytime sleepiness. Tiredness, together with loss of alertness and attention deficit, not only makes it difficult for OSAHS patients to function on a daily basis, but also contributes to a general increase in mortality, due to the increased risk of road traffic accidents.⁹

Only 5%–9% of patients with OSAHS are diagnosed¹⁰ and the burden on public health services in Western societies is considerable.¹¹ Moreover, OSAHS involves indirect costs that are very difficult to calculate, such as limited ability to work, accidents at work, and loss of productivity.¹²

Some studies have evaluated work performance in patients with OSAHS, but results have been disputed. The syndrome has been shown to have a negative impact on patients' ability to concentrate, to organize time, to learn new tasks and to carry out monotonous tasks.^{13,14} Another study found that OSAHS, when associated with excessive daytime sleepiness, was detrimental to work performance.^{15,16} Despite some methodological limitations, cohort studies have found a higher rate of absenteeism in patients with symptoms of OSAHS.^{17,18} However, no solid conclusions have been drawn regarding the relationship between OSAHS and absenteeism.¹⁹

Some authors have reported a relationship between OSAHS symptoms and increased risk of work-related accidents. In a prospective study, Lindberg et al.²⁰ showed a 2-fold increase in the risk of workplace accidents in patients who snored and who had daytime sleepiness vs patients without those symptoms. Other large population studies,²¹ including professional drivers^{22,23} or rural workers,²⁴ found that some OSAHS symptoms, such as snoring, sleep apneas or daytime sleepiness, evaluated by direct questioning or questionnaires, were associated with a greater risk of accidents in the workplace. However, very few studies have evaluated the rate of work-related accidents in patients with a definitive diagnosis of OSAHS.

In view of the lack of consensus between studies investigating productivity and work accidents in patients with OSAHS, we designed a cross-sectional, descriptive *ex postfacto* study of productivity and work accidents in a sample of OSAHS patients vs a group of non-OSAHS individuals. A sleep study was performed in both the clinical group and the control group using the gold standard test, polysomnography. The study hypothesis was that participants in the clinical group would have a higher rate of

work-related accidents and absenteeism than the control group, and that OSAHS patients would have poorer productivity than healthy subjects. This article was written following the Hartley guidelines.²⁵

Methods

Data for this study were collected between 2010 and 2012 in 2 sleep units in hospitals in the north and in the south of Spain. The sample comprised 259 individuals who attended the sleep unit and underwent consecutive polysomnography studies. Participants were actively employed or had been unemployed for up to 6 months. All participants signed informed consent; only 6 individuals refused to take part in the study. Of the remaining 253 subjects, 204 were men and 49 were women, with ages ranging from 22 to 65 years, mean 46.85 ± 9.5 years. The clinical group consisted of 182 patients with a diagnosis of OSAHS, and 71 non-OSAHS subjects were included in the control group. Patients with a diagnosis of other sleep disorders, serious debilitating diseases, alcohol or other drug addictions, or who were receiving treatment with neuroleptics, tranquilizers or other medications that could alter sleep or cause excessive daytime sleepiness, were excluded.

Instruments

Sociodemographic data, general health and working conditions, such as work schedule, number of hours worked, shift work and type of employment contract, were collected by means of a questionnaire completed by all participants. Excessive daytime sleepiness was evaluated on the Epworth sleepiness scale (ESS)²⁶ and the subjective Pittsburgh Sleep Quality Index (PSQI).²⁷ Emotional disorders were evaluated using the Hospital Anxiety and Depression Scale (HADS).²⁸ The sum of the 2 subscales was considered, and a cut-off point of 14 was used to determine psychological distress. The survey included questions aimed at evaluating the number of days of sick leave and the number of work-related accidents in the last 18 months. Impact of disease on productivity was evaluated on the IMPALA scale,²⁹ consisting of 7 items addressing different aspects of the occupational impact of health problems, such as difficulty in following routine work schedules, in working without rest breaks, in avoiding mistakes, and in meeting deadlines. The response scale ranges from 1 (work affected constantly or for most of the time) to 4 (no impact at any time). The total transformed scale was scored from 0 (poorest productivity possible) to 100 (maximum productivity).

Procedure

OSAHS was diagnosed from a complete sleep study with conventional polysomnography. The same methodology was used in both clinics: 3 electroencephalogram channels (F4-M1, C4-M1 and O2-M1), 2 electrooculogram channels, 2 electromyography channels placed under the chin, 1 placed on the anterior tibialis of each leg, and 1 electrocardiogram channel. SaO₂, pulse and snoring

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