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## ORIGINAL ARTICLE

# Quality of life, sleepiness and depressive symptoms in adolescents with insomnia: A cross-sectional study

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## KEYWORDS

Insomnia;  
Quality of life;  
Daytime sleepiness;  
Depressive  
symptoms;  
Adolescents

## Abstract

**Objectives:** To determine the prevalence of insomnia in a sample of Portuguese adolescents and assess its repercussions on HRQoL, daytime sleepiness and depressive symptomatology.

**Design:** We carried out a cross-sectional school-based study evaluating students from Viseu.

**Location:** Students from twenty-six public secondary schools in the county of Viseu, Portugal.

**Participants:** Of 9237 questionnaires distributed, 7581 were collected (82.1%). We excluded from analysis all questionnaires from adolescents younger than 12 or older than 18 years of age (211) and unfilled forms (451). The sample comprised 6919 adolescents, the 7th to 12th grade, from 26 public secondary schools.

**Interventions:** None.

**Measurements:** Data gathering was done using a self-applied questionnaire. Insomnia was defined based on the Diagnostic and Statistical Manual of Mental Disorders – IV criteria. HRQoL was evaluated with the Quality of Life Health Survey SF-36, depressive symptomatology with BDI-II and daytime sleepiness with the Epworth Sleepiness Scale.

**Results:** Prevalence of insomnia was 8.3% and the prevalence of adolescents with symptoms of insomnia without daytime impairment (disturbed sleepers) was 13.1%. HRQoL was significantly reduced among adolescents with insomnia compared to normal sleepers ( $p < 0.001$ ) and even when compared to disturbed sleepers ( $p < 0.001$ ). There was an increase in daytime sleepiness from normal sleepers to disturbed sleepers and to adolescents with insomnia ( $p < 0.001$ ). There was also an increase in the prevalence and severity of depressive symptoms ( $p < 0.001$ ).

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**Conclusions:** Our results show that insomnia is associated with a significantly lower health related quality of life among adolescents.

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## PALABRAS CLAVE

Insomnio;  
Calidad de vida;  
La somnolencia  
diurna;  
Los síntomas  
depresivos;  
Adolescentes

## Calidad de vida, somnolencia y sintomatología depresiva en adolescentes con insomnio: un estudio transversal

### Resumen

**Objetivos:** Determinar prevalencia de insomnio en una muestra de adolescentes portugueses y evaluar sus repercusiones en la calidad de vida relacionada con la salud (CVRS), somnolencia diurna y sintomatología depresiva.

**Diseño:** Estudio transversal evaluar a los estudiantes de Viseu.

**Emplazamiento:** Estudiantes de 26 escuelas secundarias públicas en condado de Viseu, Portugal.

**Participantes:** De 9.237 cuestionarios distribuidos, se recogieron 7.581 (82,1%). Se excluyeron del análisis todos los cuestionarios de adolescentes menores de 12 o mayores de 18 años de edad (211) y las formas sin relleno (451). La muestra fue de 6.919 adolescentes, del 7.º al 12.º grado, de 26 escuelas secundarias públicas.

**Intervenciones:** No se aplicó ninguna intervención.

**Mediciones:** La recolección de datos se realizó mediante un cuestionario autoaplicado. El insomnio se define sobre la base de los criterios del *Manual diagnóstico y estadístico de los trastornos mentales*, cuarta edición. La CVRS se evaluó con la calidad de vida de la Encuesta de Salud (SF-36), la sintomatología depresiva con BDI-II y la somnolencia durante el día con Epworth.

**Resultados:** La prevalencia de insomnio fue del 8,3% y de síntomas de insomnio sin deterioro durante el día (durmientes perturbados) fue del 13,1%. La CVRS se redujo significativamente entre los adolescentes con insomnio en comparación con los durmientes normales ( $p < 0,001$ ) e incluso cuando se compara con durmientes perturbados ( $p < 0,001$ ). Hay un aumento en la somnolencia diurna de durmientes normales comparados con los durmientes perturbados y los adolescentes con insomnio ( $p < 0,001$ ). También hubo un aumento en la prevalencia y la gravedad de los síntomas depresivos ( $p < 0,001$ ).

**Conclusiones:** Nuestros resultados muestran que el insomnio se asocia a una CVRS significativamente más baja entre los adolescentes.

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## Introduction

Insomnia is well known as the major sleep disorder among adolescents<sup>1,2</sup> and its consequences have been shown to affect several aspects of adolescents' health and daily performance.<sup>2,3</sup> Moreover, behavioral patterns established during adolescence have the potential to affect the development of adulthood lifestyles.<sup>4,5</sup>

Several studies have exposed the link between insomnia and physical repercussions ranging from lack of energy and fatigue, to headache, abdominal and back pain, obesity and poor health in general.<sup>2,6-8</sup> The behavioral, emotional and psychiatric burden of insomnia is perhaps even more unmistakable, with a rising body of evidence associating insomnia to depression, anxiety, suicidal thoughts and attempts, poor academic performance, poor perceived health and substance abuse.<sup>2,9-12</sup> Daytime sleepiness is a more ambiguous consequence of insomnia. Nevertheless, it has been shown to be increased in adolescents with disturbed sleep and to result in poorer humor and diminished functioning in daily activities and learning.<sup>13-15</sup>

There is still little research on the influence of insomnia in adolescent's Health Related Quality of Life (HRQoL) and results are inconsistent. Palermo et al.<sup>16</sup> found that increased insomnia symptoms were associated with poorer HRQoL outcomes. Roberts et al.<sup>10</sup> found no effect of insomnia on somatic and psychological functioning (perceived health, health limitation and impact of illness; perceived mental health and life satisfaction) whereas the same author Roberts et al.<sup>8</sup> reported that insomnia increased the risk of poor somatic and psychological functioning. One study explored this issue in an older population (a sample of college students, mean age 20.39 years) and concluded that students with chronic insomnia had lower quality of life.<sup>5</sup> Furthermore, the theoretical pathways linking insomnia and HRQoL need clarification. A negative relationship between adolescents' sleep patterns (eveningness) and HRQoL has been found<sup>17,18</sup> and it is proposed that insomnia symptoms may be the mediating factors in this relationship.<sup>18</sup> Another possible association between insomnia and HRQoL may be the direct result of sleep deprivation.<sup>15</sup>

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