



ORIGINAL ARTICLE

Physical activity, screen time and sleep patterns in Chilean girls[☆]



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KEYWORDS

Sedentary behaviour;
Sleep quality;
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Abstract

Introduction: Physical activity (PA), screen time (ST), and sleep are modifiable lifestyle habits for health. The objectives of this study were: (a) to examine the association between PA, ST, and both, on sleep patterns; and (b) to determine the influence of PA and ST on sleep problems in Chilean girls.

Patients and methods: The study involved 196 children (12.2 years). Patterns and sleep problems were assessed using the Spanish version of the *Sleep Self-Report*, and the PA through the *Physical Activity Questionnaire for Adolescents* (PAQ-A), both in Castilian. The ST was assessed using several questions about television, game console and computer use.

Results: The ST recommendation (<2 h a day) was exceeded by 63.2% of the girls. In general, the most active girls (last quartile) that did not exceed the recommendations of ST reported higher sleep quality and total score values compared to those who did not meet both. The logistic regression analysis showed that girls who did not meet both habits were more likely to have sleep quality (odds ratio = 17.8, $P=0.018$), and general sleep problems (odds ratio = 7.85, $P=0.025$).

Conclusions: Parents need to set limits on sedentary leisure time and encourage more active habits, as sleep is a parameter closely linked to a better health profile in youth.

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PALABRAS CLAVE

Conducta sedentaria;
Calidad del sueño;
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Actividad física, tiempo de pantalla y patrones de sueño en niñas chilenas**Resumen**

Introducción: La actividad física (AF), el tiempo de pantalla (TP) y el sueño son hábitos de vida modificables relacionados con la salud. Los objetivos de este estudio fueron: a) examinar la asociación entre la AF y el TP y ambos con los hábitos de sueño; b) determinar la influencia de los hábitos de AF y el TP sobre los problemas asociados al sueño en niñas chilenas.

Pacientes y métodos: El estudio involucró a 196 niñas (12,2 años). Los hábitos de sueño fueron evaluados con el cuestionario *Self-report sleep* y la AF con el *Physical activity questionnaire for adolescents*, ambos en castellano. El TP se evaluó a través de diversas preguntas sobre el tiempo de uso de la televisión, videoconsola y ordenador.

Resultados: El 63,2% de las niñas excedieron el límite recomendado de 2 h al día de TP. En general, las niñas más activas (último cuartil) que no excedían las recomendaciones de TP reportaban valores más altos de calidad del sueño y puntuación total respecto a las que no cumplían ambas. El análisis de regresión logística mostró que las niñas que no cumplían ambos hábitos tenían mayor probabilidad de presentar problemas asociados a su calidad del sueño (odds ratio = 17,8; $p = 0,018$) y sueño general (odds ratio = 7,85; $p = 0,025$).

Conclusiones: Parece necesario que los padres establezcan límites respecto a las horas de ocio sedentario y favorezcan un mayor hábito activo, puesto que el sueño es un parámetro íntimamente ligado a un mejor perfil saludable en niños.

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Introduction

Inadequate sleep in childhood has important consequences on health.¹ It is also associated with attention difficulties, cognitive disorders, poor academic performance and mood disorders.² In this regard, sleep deprivation and sleep disorders are common in young adults and adolescents worldwide.³ In recent years, sleep deprivation has also attracted interest as a potential contributor to the obesity epidemic in children and adolescents.⁴ Along with research on sleep duration, several studies have also investigated sleep quality.^{5,6}

There is a wide range of lifestyle factors that influence sleep duration and quality in young individuals, among which are physical activity (PA) and health-related habits such as screen time (ST).^{7,8} The current literature on PA offers inconclusive and inconsistent findings.^{5,9–12} On the other hand, new technologies and the patterns of their use are changing rapidly and deserve more attention due to their impact on sleep and wellbeing.⁷ Studies on this subject suggest that more than two hours a day of ST may negatively impact children,¹³ as it is associated with delayed sleep onset, night wakings, sleep-related anxiety and shortened sleep duration.^{14,15}

Although multiple studies have focused on physical exercise and ST separately, there is little evidence on the adherence to PA and ST recommendations and its relationship with sleep quality in youth. In this regard, girls seem to be an ideal target for the promotion of healthy habits, given their low levels of PA¹⁶ and poorer sleep habits (especially sleep-related anxiety)¹⁷ compared to their male peers. Thus, the objectives of this study were: (a) to study the association between PA, ST and both with sleep habits;

(b) determine the influence of PA and ST habits on sleep problems in Chilean girls.

Patients and methods**Patients**

We conducted a cross-sectional descriptive study. We requested the participation of all the female students enrolled in the seventh year of primary school in seven schools in the region of Maule (Chile), and 196 (89%) accepted. The participants attended public, partially subsidised and private schools in rural areas. The study had a convenience sample. We excluded girls that had special education needs or any disorder that limited their ability to engage in physical activity. The study protocol was approved by the Ethics Committee of the Universidad Autónoma de Chile and later on by the principal of each school. After obtaining approval, we sent a letter to the parents of all children in seventh grade inviting them to a meeting where we informed them of the objectives of the study and obtained their written consent for the participation of their children in the study. Lastly, we collected all the signed forms and the researchers met with the physical education teacher to collect data in autumn of 2014 (March–June).

Anthropometric measurements

Participants wearing light clothing were weighed twice using a digital scale accurate to 100 g. Their height was measured twice with the patient barefoot using a wall stadiometer. The means of both measurements were used to calculate the

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