

Original article

Patterns of physical activity and associated factors among teenagers from Barcelona (Spain) in 2012

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ABSTRACT

Objective: To estimate the prevalence of moderate and vigorous physical activity (MVPA), as defined by the World Health Organisation (WHO), and associated factors among teenagers from Barcelona in 2012.

Methods: Cross-sectional survey to assess risk factors in a representative sample of secondary school students (aged 13–16 years, International Standard Classification of Education [ISCED] 2, n = 2,162; and 17–18 years, ISCED 3, n = 1016) in Barcelona. We estimated MVPA prevalence overall, and for each independent variable and each gender. Poisson regression models with robust variance were fit to examine the factors associated with high-level MVPA, and obtained prevalence ratios (PR) and 95% confidence intervals (95%CI).

Results: Only 13% of ISCED 2 and 10% of ISCED 3 students met the WHO physical activity recommendations. This percentage was lower among girls at both academic levels. MVPA was lower among ISCED 3 compared to ISCED 2 students, and among students with a lower socioeconomic status. Physical activity was associated with positive self-perception of the health status (e.g., positive self-perception of health status among ISCED 2 compared to ISCED 3 students: PR = 1.31 [95%CI: 1.22–1.41] and 1.61 [95%CI: 1.44–1.81] for boys and girls, respectively).

Conclusions: The percentage of teenagers who met WHO MVPA recommendations was low. Strategies are needed to increase MVPA levels, particularly in older girls, and students from low socioeconomic backgrounds.

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Los patrones de actividad física y sus factores asociados en adolescentes de Barcelona en 2012

RESUMEN

Objetivo: Estimar la prevalencia de actividad física moderada y vigorosa (AFMV), tal como la define la Organización Mundial de la Salud (OMS), y sus factores asociados en adolescentes de Barcelona en el año 2012.

Métodos: Encuesta transversal para evaluar los factores de riesgo en una muestra representativa de estudiantes de secundaria (13-16 años, Clasificación Internacional Normalizada de la Educación [CINE] 2, n = 2162; y 17-18 años, CINE 3, n = 1016) de Barcelona. Se estimó la prevalencia de la AFMV en general y para cada variable independiente y sexo. Se ajustaron modelos de regresión con varianza robusta para examinar los factores asociados con niveles altos de AFMV, obteniendo razones de prevalencia (RP) y los intervalos de confianza del 95% (IC95%).

Resultados: Solo el 13% de los estudiantes de CINE 2 y el 10% de CINE 3 cumplían con las recomendaciones de actividad física de la OMS. Este porcentaje fue inferior en las chicas en ambos niveles académicos. La AFMV fue menor en los estudiantes de CINE 3 comparados con los de CINE 2, y en aquellos con un nivel socioeconómico más bajo. La actividad física se asoció con una autopercepción positiva del estado de salud (p. ej., autopercepción positiva de la salud en los/las estudiantes de CINE 2, en comparación con los/las de CINE 3: PR = 1,31 [IC95%: 1,22-1,41] y 1,61 [IC95%: 1,44-1,81] para chicos y chicas, respectivamente).

Palabras clave:

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Conclusiones: El porcentaje de adolescentes que cumplían con las recomendaciones de AFMV de la OMS fue bajo. Se necesitan estrategias para incrementar la AFMV, en particular en las chicas de mayor edad y en los/las estudiantes con niveles socioeconómicos bajos.

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Introduction

Regular vigorous physical activity contributes to improved general physical health and lower rates of depression and anxiety.¹ Research suggests that academic performance is also enhanced in students who regularly engage in physical activity.² Importantly, from a long-term health perspective, participation in regular physical activity during adolescence is associated with a greater probability of being a physically active adult, a key determinant in preventing a range of negative health outcomes.³

The World Health Organisation (WHO) recommends that children and teenagers aged 5-17 years participate in at least 60 minutes of moderate or vigorous physical activity (MVPA) daily. MVPA is associated with more favourable health parameters, such as lower central adiposity, reduced cardiovascular risk and improved bone health.⁴ However, most studies in teenagers indicate that only a small percentage meet these recommendations. Global estimates suggest that only 20% of teenagers aged 13-15 years achieve recommended levels of MVPA.⁵ In Europe, this percentage is 34% among 11- to 15-year-olds,⁶ and just 17% in Spain.⁷ In 2008, in Barcelona, it is estimated that less than half (44%) of students aged 13 to 19 years regularly participated in physical activity, and there is no information regarding the amount of time spent in physical activity.⁸

Regular physical activity during adolescence appears to be especially uncommon among girls,⁹ older teenagers,¹⁰ and those with a lower socioeconomic status (SES).¹¹ Lifestyle factors, such as alcohol or tobacco use,¹² and some health indicators, such as self-perceived health status, mood or body mass index (BMI),¹³ have also been found to be related physical activity in teenagers. However, the reported strength and the direction of these associations are often contradictory, possibly because few studies have accounted for important factors such as school and neighbourhood settings, and other factors that may limit physical activity.^{14,15} Moreover, parents, friends and teachers have an important influence on physical activity, and their support is associated with greater participation in physical activity.¹⁶

Given the importance of physical activity for health and wellbeing, and the current climate of poor compliance with recommended levels of physical activity among teenagers, it is important to identify factors associated with failure to achieve MVPA recommendations.⁴ This would facilitate the design of interventions to address factors that prevent teenagers from achieving recommended MVPA levels. Thus, the aim of our study was to estimate the prevalence of moderate and vigorous physical activity (MVPA), as defined by the WHO, and associated factors among teenagers from Barcelona in 2012.

Methods

A cross-sectional survey of lifestyle risk factors (*Risk Factors in Secondary School Students*; FRESC) was conducted in a representative sample of secondary school students from Barcelona who had been classified according to the UNESCO International Standard Classification of Education (ISCED) as ISCED 2 (13-16 years) and ISCED 3 (17-18 years).¹⁷ Students completed an anonymous self-report questionnaire that collected information on various behaviours, such as substance use, leisure time

activities, and sedentary behaviour. Anthropometric data based objective measurements of weight and height was also collected.

In Barcelona, in 2011-2012, there were 274 schools, 1,659 classrooms and 40,278 students.¹⁸ Stratified random sampling was used for all academic levels, with the classroom as the smallest sampling unit. Stratification was conducted according to type of school (public, private or subsidised) and the SES of the surrounding neighbourhood (low, medium or high, according to the Index of Familial Economic Capacity).¹⁹ The students' response rate was 87.6%. Students who provided incomplete data (9%) were excluded from the study, resulted in a total sample of 3,178 students (ISCED 2, n = 2,162; ISCED 3, n = 1,016; girls, n = 1,643; boys, n = 1,535).

The self-reported questionnaire²⁰ was administered between January and March of 2012 by trained personnel from Barcelona Public Health Agency (ASPB) during school time in the presence of the classroom teacher. Principals and teachers of selected schools were properly informed about the objectives of the study and they gave their verbal informed consent. Given the nature of the questionnaire, the Research Committee of the ASPB did not consider necessary a parental informed consent.

The dataset was created by scanning the completed forms using the Teleform 10.2 program.

Dependent variable

The dependent variable was based on answers to the question: "How many hours a day do you spend practising sport? (i.e. physical activity that makes you sweat and become out of breath, such as, football, swimming, etc., including physical activity practised at school)". We requested a separate response to this open question for each day of the week, which allowed us to assess the daily number of minutes of physical activity. From this we determined whether students had performed more than 60 minutes or less than 60 minutes of physical activity per day, and constructed three distinct dependent variables:

- MVPA3: ≥ 60 minutes of MVPA per day at least 3 days a week;
- MVPA5: ≥ 60 minutes of MVPA per day at least 5 days a week;
- MVPA7: ≥ 60 minutes of MVPA per day, 7 days a week (the WHO recommendation).

Independent variables

We used three types of independent variables (Table 1):

- Socio-demographic variables: academic level (ISCED 2; ISCED 3); migration status (native; 1st generation immigrant, individuals born outside Spain; and 2nd generation immigrant, individuals born in Spain but with at least one parent born outside Spain); type of school (public, private or subsidised); socioeconomic status (SES) of the individual and the school. To obtain individual SES we used the Family Affluence Scale (FAS),⁷ an individual measure based on the material conditions of households in which young people live, such as holidays or bedroom occupancy. This variable was categorized as low, medium or high individual SES. The SES of the school was established on the basis of the average household income in the surrounding neighbourhood,²¹ and was

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