Prevalence of physical activity among adolescents in southern Brazil

Tiago Rodrigues de Lima, PE, MSc [*], Diego Augusto Santos Silva, PE, PhD

Federal University of Santa Catarina, Physical Education Department, Florianopolis, SC, Brazil

A B S T R A C T

Objetive: The aim of this study was to estimate the prevalence of low physical activity levels and to identify related factors (sociodemographic, lifestyle and body weight status) in adolescents.
Methods: The study included 1103 students aged 14—19 years from city of São José/SC, Brazil. Physical activity was assessed using a questionnaire that classified adolescents into those who meet recommendations and those who do not meet recommendations. Independent variables were gender, age, monthly household income, maternal education, balanced diet, number of physical education classes, sleep/day, tobacco use, excessive alcohol use, screen time and weight status. Binary logistic regression was used to estimate odds ratios and 95% confidence intervals.
Results: Prevalence of inadequate levels of physical activity was 77.2%. Older students and those with lower monthly family income were more likely to have inadequate levels of physical activity. Female adolescents and older students were more likely to be sufficiently active compared to male and younger adolescents. Adolescents who sleep more hours/day were more likely to be insufficiently active.
Conclusion: Efforts to increase levels of physical activity should be focused on older adolescents and those with lower monthly family income.

© 2017 Elsevier Ltd. All rights reserved.

1. Introduction

The practice of regular physical activity in adolescents promotes better indicators in relation to physical fitness, bone health and biomarkers of cardiovascular and metabolic health (WHO, 2015). In contrast, the failure to meet physical activity practice recommendations is associated with dyslipidemia, diabetes, obesity and high blood pressure (WHO, 2015). In addition, in 2008, 9% of all premature deaths of individuals of all age groups worldwide have been directly associated with insufficient levels of physical activity (Lee et al., 2012).

Several surveys have shown high prevalence of insufficiently active adolescents (Al Subhi et al., 2015; Kann et al., 2014; Peltzer, 2010). In survey conducted in ten countries of the Eastern portion of the Mediterranean, the prevalence of adolescents who did not meet recommendations regarding the practice of moderate or vigorous physical activity per week (≥5 days a week) was 81.0% (Al Subhi et al., 2015). In survey on the African continent, gathering information from eight countries, the prevalence of adolescents who did not meet recommendations regarding the practice of moderate or vigorous physical activity (≥5 days a week) was 85.8% (Peltzer, 2010). In the United States, the prevalence of adolescents who did not meet recommendations regarding the practice of moderate or vigorous physical activity (≥5 days a week) was 52.7% (Kann et al., 2014)). In Brazil, a nationwide survey identified prevalence of 79.8% of adolescents who did not meet recommendations (300 min per week) regarding the practice of physical activity (BRASIL, 2013), indicating that as seen in other countries, the prevalence of insufficiently active adolescents in Brazil is high.

Individual aspects such as sociodemographic factors have been studied in literature and, in general, it was found that increasing age, being female, low economic level and low maternal education level were associated with insufficient levels of regular physical activity (Al Subhi et al., 2015; Cureau et al., 2016). In addition, individual aspects of lifestyle were also associated with insufficient practice of physical activity in adolescents (de Oliveira et al., 2012; Garaulet et al., 2011; Health and Council, 2009; Rom et al., 2012). Inadequate diet (Garaulet et al., 2011), fewer physical education classes and fewer hours of sleep/day (Garaulet et al., 2011), smoking and excessive alcohol use (Health and Council, 2009; Rom et al., 2012), excessive time in front of electronic devices (de Oliveira et al., 2012), and overweight/obesity (Garaulet et al., 2011) are factors that were associated with insufficient levels of practice of

* Corresponding author. Federal University of Santa Catarina, Sports Center, Research Center of Kinanthropometry and Human Performance, University Campus, Trindade neighborhood, Mailbox 476, 88040-900, Florianópolis, SC, Brazil.

E-mail address: tiagopersonaltrainer@gmail.com (T.R. de Lima).

physical activity in adolescents.

Although the correlated health benefits of meeting the recommendations of physical activity practice are explicit, the prevalence of adolescents (13–15 years) physically inactive worldwide is 80%, considering the recommendation of at least 60 min of moderate to vigorous physical activity (WHO, 2015). Another aspect that should be taken into account is the fact that the increasing burden of chronic diseases in low- and middle-income countries requires greater public health efforts aimed at increasing physical activity (WHO, 2009). Health disorders resulting from noncompliance with recommendations of practice of physical activity in adolescence usually manifest throughout adult life; however, their development seems to begin later in childhood and adolescence (Sawyer et al., 2012). Moreover, although several studies have investigated factors associated with insufficient levels of physical activity (Al Subhi et al., 2015; BRASIL, 2013; Kann et al., 2014), the number of adolescents who do not meet minimum recommendations of practice of physical activity is growing, which reinforces the need for the continued monitoring of this population in order to encourage actions to promote the practice of physical activity and reduce economic costs for treatment of health disorders associated with insufficient levels of physical exercise (Lobelo et al., 2014), since physical inactivity is the leading cause of death worldwide (WHO, 2009).

The aim of this study was to estimate the prevalence of inadequate levels of practice of physical activity and related factors (sociodemographic, lifestyle and body weight status) in adolescents from a city in southern Brazil.

2. Methods

This school-based, cross-sectional and epidemiological study was carried out in 2014 in the city of São José/SC, southern Brazil. The city has Human Development Index (HDI) of 0.809, with life expectancy at birth of 77.81 years, per capita income of R$ 1.157,43 and GINI index of 0.44 (United, Nations, 2013).

The study population consisted of 5182 public high school students aged 14–19 years from the city of São José, distributed into 11 eligible schools and 170 high-school classes. The sampling process was determined in two stages: 1) stratified by public high schools (n = 11); 2) clusters of groups considering school shift and school grade (n = 170 classes). In stage two, all high-school students who were present in the classroom on the days of data collection were invited to participate in the study. The probabilistic sample consisted of 1132 students. Details on estimates for sample size calculation and the entire sampling process (inclusion, exclusion criteria, and eligibility) can be found in literature (Silva et al., 2016).

The study was approved by the Ethics Committee in Human Research of the Federal University of Santa Catarina Committee under CAAE protocol: 33210414.3.0000.0121. Only students who returned the informed consent form signed by parents (<18 years) or themselves (≥18 years) participated in the study.

Data collection occurred at the school environment in the second half of 2014 during the period from August to November. The research team was composed of undergraduate and graduate students previously familiar and trained to administer the questionnaire and physical assessments. The questionnaire was applied in classroom, and data were provided by students.

The dependent variable was overall physical activity, assessed by question of the Brazilian version of the Youth Risk Behavior Surveillance (YRBSS) questionnaire used in the United States, translated and validated for Brazil (Guedes and Lopes, 2010). This questionnaire showed moderately high kappa index, with average value of 68.3% and median of 68.5% (Guedes and Lopes, 2010). The question used to assess overall physical activity was "Over the past seven days, on how many days were you physically active for at least 60 min a day? (Consider physical activity of moderate and/or vigorous intensity)". This question had responses categorized into does not meet recommendations (zero to four days) and meets recommendations (five days or more), since in addition to being used in population survey with Brazilian adolescents (BRASIL, 2013), studies have reported that physical activity of moderate and vigorous intensity performed for at least five days a week for at least 60 min brings benefits to adolescent health (Kann et al., 2014).

Sociodemographic variables were gender (male/female), age in years, later categorized into 14/15, 16/17 and 18/19 years. Maternal schooling data were collected in complete years and categorized into eight years of study and eight or more years of study in order to be comparable with the average years of study of Brazilian adults (7.8 years) (BRAZIL, 2013). Family income collected according to the Brazilian Institute of Geography and Statistics (IBGE, 2013) in number of minimum wages received among family members (minimum wage equivalent to R$ 724,00 in the data collection period) was categorized into up to two minimum wages (low); two to ten minimum wage (intermediate); above ten times minimum wage (high).

The questioning in relation to diet is part of the "Fantastic Lifestyle", questionnaire, translated and validated for the Brazilian population (Rodriguez Añez et al., 2008). This variable was collected by questions related to typical week: "Do you have a balanced diet?" Response options for this question were: hardly ever; rarely; sometimes; with relative frequency; often. A balanced diet was composed of cereals and grains (5–12 servings per day); fruits and vegetables (5–10 servings per day); meats and meat products (2–3 servings a day); milk and dairy products (3–4 servings up to 16 years and 2 to 4 portions over 16 years) (Gledhill and Jamnik, 2003). Response options almost never, rarely and sometimes were classified into no. Response options with relative frequency and often were classified into yes. This variable has been classified in this way in order to equate variables reported in literature (Garaulet et al., 2011).

The number of physical education classes is a question included in the COMPAC questionnaire (Behavior of Adolescents from Santa Catarina), whose r value for independent items grouped by thematic unit ranged from 0.64 to 0.99 (Silva et al., 2008). The number of physical education classes was collected by the following question: "During a normal week (typical), on how many physical education classes do you participate?" Responses to this item were classified into zero class per week; one class per week; two classes per week and three or more classes per week, given that during these classes, students perform bodily practices and the sum of these activities positively contributes to meet recommendations regarding the weekly practice of physical activity (Strong et al., 2005).

Values in relation to the number of hours of sleep/day were obtained based on a structured questionnaire through the following question "What time do you usually go to bed and what time do you wake up?" This item was divided in relation to weekly periods, from Monday to Friday; from Friday to Saturday; from Saturday to Sunday and from Sunday to Monday, with response options related to bedtime and time to wake up. To define the average number of sleep hours, the average of these results was considered, in which the number of sleep hours verified from Monday to Thursday was multiplied by four, and values recorded from Friday to Saturday, from Saturday to Sunday and from Sunday to Monday were added and the total was divided by seven (number of days of the week) (Garaulet et al., 2011). The result observed was categorized into < eight hours of sleep/day and ≥ eight hours of sleep/day, given the direct relationship between short sleep duration (<eight hours/day) and increased health risk factors (Garaulet