

SLEEP DURATION FROM ADOLESCENCE TO EARLY ADULTHOOD. A POPULATION-BASED COHORT STUDY IN BRAZIL

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1. INTRODUCTION

Adequate sleep duration is essential for physical and mental health as well wellbeing. A wide range of health conditions such as diabetes, hypertension, hypercholesterolemia, obesity, depression, and all-cause mortality were associated with short or long sleep duration (MASLOWSKY, 2014).

During adolescence, sleep plays a critical role in physical and intellectual development, including memory and learning consolidation, and it is important to school and work success (BORN, 2012; RASCH, 2013). A review including 41 studies from 1999 to 2010 (most of them with cross-sectional design) pointed out that these studies came out from high income countries, predominantly (GRADISAR, 2011). In all regions, when adolescents become older, they tend to start sleep later maintaining the wake-up time, which impacts on sleep duration. Nevertheless, some differences were found across countries. For example, Asians slept later, had lower sleep duration and greater daytime sleepiness than Americans and Europeans.

The majority of data about sleep patterns came from cross-sectional design. Longitudinal studies, in most of times, assess prevalence of sleep duration in each age isolated, in very short follow-up periods. Besides that, the samples were mostly comprised by children and adolescents, although sleep patterns are not fully stable in young adults (HAYLEY, 2015). The purpose of this study is to describe the sleep duration by sex from adolescence to early adulthood in a birth cohort study in Brazil.

2. METHODS

All live births from mothers who gave birth from January 1st to December 31st during the 1993 calendar year and were living in the urban area of Pelotas were invited to participate in this birth cohort. From the 5,265 eligible pairs of mother-baby, 5,249 accepted to participate in this birth cohort. From birth to the 11-years old visit, subsamples were evaluated. From 11 years-old visit and onwards, all participants were sought. Further information regarding the methodology used in the cohort study is described elsewhere (GONÇALVES, 2014, 2018; VICTORA, 2008). The present study was based in information collected from follow-ups at 11, 18- and 22-years old visits, when all participants were invited to be evaluated. In this study, we included only cohort members with complete data for sleep duration. In addition, we excluded those with less than 2 and more than 15 hours of sleep at night as we consider these values as implausible. Moreover, we also excluded those who reported had taken sleep pills in the last 15 days at 11- and 18-years follow-ups and in the last 30 days at 22 years follow-up or if this information was missing.

Sleep duration was defined as the number of sleep hours in weekdays at 11, 18 and 22 years old. Questions were the same in the three follow-ups (exposed here in free translation): “*What time do you usually sleep on a weekday, other than Saturdays and Sundays?*” and “*What time do you usually wake up on a weekday, other than Saturdays and Sundays?*”. Sleep duration was calculated as the time difference between the two answers. Then, we used the recommendation of the National Sleep Foundation for adequate sleep duration: between 9 and 11 hours per day at age 11 and between 7 and 9 hours per day at ages 18 and 22 years old. Those with less or more hours of sleep duration per day than this recommendation were classified as shorter or longer sleepers, respectively (HIRSHKOWITZ, 2015).

All analyses were stratified by sex and performed on Stata version 13.1 (Stata Corp., College Station, TX, USA). On all phases of the present study, ethical approval was obtained from the Medical School Ethics Committee of the Federal University of Pelotas, and full informed consent was provided by cohort members or by their parents if the subject was younger than 18 years old. The 18 and 22 follow-ups have protocols numbers 05/11 and 1.250.366, respectively.

3. RESULTS E DISCUSSION

The study included 3.226 individuals (52.7% females). Those excluded from analysis due to missing data or loss of follow-up were more like to be male ($p=0.03$).

Prevalence of short sleep duration, for males, decreases from 11 to 18 years old and increases again at 22 years old. Long sleep, increases from 11 to 18 years old and decreases at 22 years old. For women, the highest prevalence of short sleep duration was at 11 years old, while occurrence of long sleep duration was highest at 18 years old (Figure 1).

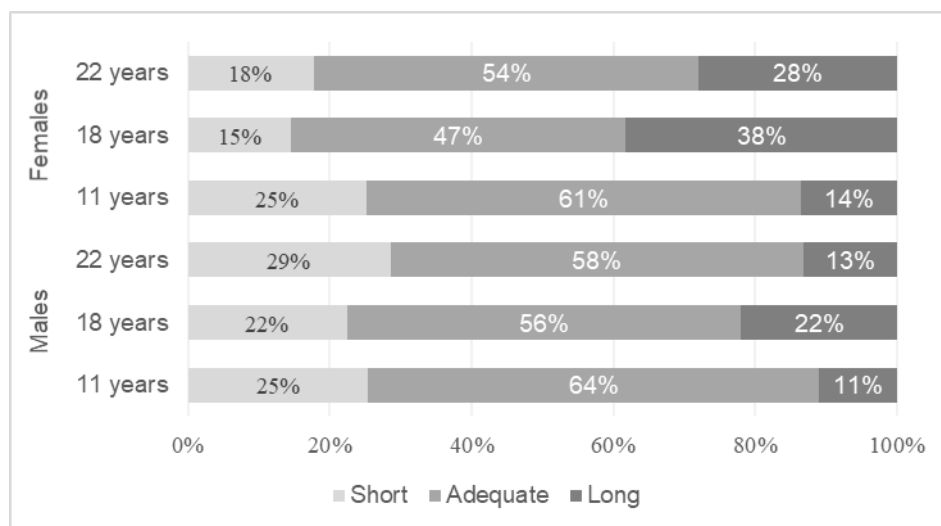


Figure 1. Prevalence of adequate, short and long sleep duration according age in men ($n=1.525$) and women ($n=1.701$)

Our study showed substantial differences according to sex in the proportions of short, adequate and long sleep duration. Unlike the majority of studies (BAUDUCCO, 2016; CHANG, 2018; DOLLMAN, 2007; MASLOWSKY, 2014; PATTE, 2017; WHEATON, 2018) we found a decrease in prevalence of short sleep duration and an increase in prevalence of long sleep duration during adolescence (11 to 18 years old). This may be related to the same cut-off for all

ages used in many studies. In a sensitivity analysis, using the same cut-off points for every age evaluated in our study, the results are similar to literature (FELDEN, 2016; MASLOWSKY, 2014; ROBERTS, 2017; SCHÄFER, 2016). According to National Sleep Foundation the recommended hours of sleep decrease from childhood (adequate sleep between 9—11 hours) to adolescence and early adulthood (both 7-9 hours) (Hirshkowitz et al., 2015). Using recommended cut-off points for sleep duration by age, both Chaput, in Canada, found a decrease of short sleep duration across adolescence as well as our study (CHAPUT, 2016). Furthermore, if these recommendations are not considered, the prevalence of short sleep duration may be underestimated in children and overestimated in adolescents.

4. CONCLUSION

Prevalence of short and long sleep duration varied widely across sex and age. However, the cutoff point used in this study is based on international studies and may not reflect the ideal duration of sleep in our population. Future researches should include other sleep measures methods and also consider sleep duration continuously rather than categorically.

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