

Sleep quality and health in Slovenian schoolchildren

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Abstract

Introduction: Sleep is essential to healthy development, and is required for both physical and mental health and well-being. Increased screen-time and sedentary behaviour is associated with decreases in sleep quality. The purpose of this short review is to examine trends in sleep and sedentary behaviours (especially screen time) in the Slovenian population. Methods: A review of literature describing increases in screen time and sedentary behaviour on sleep quality was conducted, with particular emphasis on Slovenian schoolchildren. Results: Screen time has been shown to disrupt sleep and can displace physical activity for some people. Insufficient sleep can reduce physical activity levels in its own right; insufficient sleep is also associated with more screen time in children. In Slovenian schoolchildren specifically, screen time and sedentary behaviours are significantly increased on weekends compared to during school days, to an extent that the sedentary behaviour could negatively affect sleep quality, and certainly contribute to poor sleep hygiene. Discussion: Future research should focus on establishing more concrete trends in the data between screen times and sedentary behaviours on sleep quality in the Slovenian population, especially amongst its youth. Integrating and publishing population data is essential to examine how screen time is affecting individual health and well-being in this rapidly growing research area. Whether these weekday/weekend patterns in screen time and sleep remain consistent during the unprecedented weekly routine changes, school closures and other issues from the ongoing COVID-19 restrictions remains to be determined. Keywords: sleep quality, physical inactivity, sedentary behaviours

Kakovost spanja in zdravje slovenskih šolarjev

Povzetek

Uvod: Spanje je bistvenega pomena za zdrav razvoj in je potrebno tako za fizično kot duševno zdravje in dobro počutje. Povečanje časa zaslona in sedečega vedenja je povezano z zmanjšanjem kakovosti spanja. Namen tega kratkega pregleda je preučiti trende spanja in sedečega vedenja (zlasti časa na zaslonu) pri slovenski populaciji. Metode: Opravljen je bil pregled literature, ki opisuje povečanje časa zaslona in sedečega vedenja glede kakovosti spanja, s posebnim poudarkom na slovenskih šolarjih. Rezultati: Dokazano je, da čas zaslona moti spanje in lahko nekaterim izpodrine telesno aktivnost. Nezdosten spanec lahko samostojno zmanjša raven telesne aktivnosti; nezadosten spanec je povezan tudi z več časa na zaslonu pri otrocih. Konkretno pri slovenskih šolarjih se čas ob ekranu in sedeče vedenje ob vikendih bistveno povečata v primerjavi s šolskimi dnevi, in sicer tako, da bi sedeče vedenje lahko negativno vplivalo na kakovost spanja in zagotovo prispevalo k slabi higieni spanja. Razprava: Prihodnje raziskave bi se morale osredotočiti na ugotavljanje konkretnjših trendov v podatkih med zaslonskimi časi in sedečim vedenjem o kakovosti spanja v slovenski populaciji, zlasti med njeno mladino. Vključevanje in objavljjanje podatkov o prebivalstvu je bistvenega pomena za preučitev vpliva zaslona na zdravje in dobro počutje posameznika na tem hitro rastočem raziskovalnem področju. Ali bodo ti vzorci delovnega dne / vikenda v času zaslona in spanju ostali nespremenjeni med tedenskimi spremembami tedenske rutine, zaprtjem šol in drugimi vprašanji iz sedanjih omejitev COVID-19, bo še treba določiti. Ključne besede: kakovost spanja, telesna neaktivnost, sedeče vedenje

1. INTRODUCTION

In recent decades, children's sleep duration has decreased by about 30 to 60 minutes (Keyes et al, 2015, Matricciani et al, 2012) compared to previous years. Even people who meet the minimum requirements for sleep duration (i.e. between ~7-9 hours daily in adults, or 9-11 hours in children and youth), are not necessarily getting good quality sleep. Increased screen time and over-packed schedules mean that both kids and adults are getting poor or inconsistent sleep.

Poor sleep quality can be defined as waking many times at night, having a difficult time falling asleep, or having frequent, light arousals that can reduce the time someone spends in deep sleep and/or rapid eye movement (REM) sleep stages (Berry et al, 2014).

The purpose of this paper is to briefly outline how increases in screen time can affect sleep quality.

2. METHODS

To assist with compiling up-to-date, relevant information, we utilised a semi-structured review of the literature beginning with the free-form question "what is the state of knowledge regarding child and adult screen time and physical activity on sleep, sleep hygiene and sleep quality?" Study interventions needed to include some form of measurement of sleep (either full polysomnography or other qualitative measures, and one or both of: screen time, exercise, or have research target a particular athletic training cohort, whilst outcomes could be defined in terms of performance, physiological or psychophysical outcome variables.

Capturing as many relevant sources as possible required using common Medical Subject Headings (MeSH) from the PubMed database. Literature had to be published within the past 10 years to qualify.

3. RESULTS

A recent systematic review which included over 590,000 children and youth from 40 different countries reported that short sleep duration was associated with excess body weight, poorer emotional regulation, academic achievement, and lower quality of life (Chaput et al, In Press). Screen time has been shown to disrupt sleep (Cain et al, 2010) and can displace physical activity for some people, in other words, people who are tired are less likely to engage in physical activities when they are awake (Pearson et al, 2014).

Therefore, insufficient sleep can reduce physical activity levels in their own right (Schmidt et al 2009), and insufficient sleep is also associated with more screen time in children. (Chaput et al, 2016), possibly creating a negative-feedback loop where people who engage in more screen time have poorer sleep quality, and then do not feel like exercising regularly, which further increases sedentary behaviours.

Although Slovenia belongs to one of the most forested countries in Europe, and has an abundance of world-class national parks, physical activity data indicate that children are particularly less physically active on weekends and holidays, despite the excellent potential for enjoying all of Slovenia's natural environments (Sember et al 2016). More specifically, on school days, only 16% of boys and 19% girls aged 6-11 years play actively more than two hours per day. Overall, combined school day and weekend outdoor play data reveal that only 29% of boys and 30% of girls play outside more than two hours per day in Slovenia (Jurak et al, 2013). Indeed, other research has shown that every hour kids spend in sedentary activities delays their bedtime by three minutes (Nixon et al, 2009).

Data on combined screen time (computer, gaming, internet, mobile phone use) during weekdays and weekends was assessed by the ACDSi study (Jurak et al, 2013; Starc et al, 2015) using the CLASS (Telford et al, 2004) and SHAPES (Leatherdale et al, 2008) questionnaire. In Slovenia during weekdays, 53% of 11, 13, and 15 year-old watch television more than two hours per day, and 28% play computer games more than two hours each day (Sember et al 2016).

Daily screen time (calculated as a sum of TV watching, computer gaming and web surfing) during school days indicate that 90% of Slovenian school children do meet the recommendation of less than two hours

of screen time per day. During weekends, this percentage decreases to only 37 and 45% of boys and girls, respectively.

4. DISCUSSION

Slovenia has one of the best monitoring systems in the world for assessing physical activity and physical fitness in children and youth (Sember et al 2016). Through this monitoring, it has been established that during the school days (i.e. for five days of the week), children are meeting international guidelines regarding maximum screen time exposures, whereas on weekends this time worsens for both girls and boys (Sember et al 2018).

Whether these weekday/weekend patterns in screen time and sleep remain consistent during the unprecedented weekly routine changes, school closures and other issues from the ongoing COVID-19 restrictions remains to be determined.

The increased in screen time, sedentary behaviours, and less emphasis on outdoor family activities may affect sleep quality of both children and adults, especially since correlations from other nations have observed that increases in these habits corresponds to reduced overall sleep hours, and poorer quality sleep overall. General tips for good sleep hygiene include: go to bed and wake up at the same time every night, avoid caffeine intake, exposure to bright, natural light early in the morning, make sure your bedroom is conducive to sleeping, exercise every day, don't go to bed feeling hungry, and reserve your bedroom for sleeping only (i.e. no electronic devices!)

5. CONCLUSION

Although Slovenia produces some of the most robust research and data collection methods on physical activity and physical fitness in children and youth, it remains to be determined how trends in the population data (including increased sedentary behaviour and screen times on weekends) translates to sleep quality. Indirect data indicate sleep could be adversely affected by these negative population trends of increased screen time and sedentary behaviours, especially during weekends.

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