



## Social media use is associated with sleep duration and disturbance among adolescents in Bangladesh



Asaduzzaman Khan<sup>a,b,\*</sup>, Riaz Uddin<sup>a,b</sup>, Sheikh Mohammed Shariful Islam<sup>c</sup>

<sup>a</sup>School of Health and Rehabilitation Sciences, The University of Queensland, Brisbane, QLD 4072, Australia

<sup>b</sup>Active Healthy Kids Bangladesh (AHKBD), Dhaka, Bangladesh

<sup>c</sup>Institute for Physical Activity and Nutrition (IPAN), Deakin University, Geelong, VIC 3220, Australia

### ARTICLE INFO

#### Article history:

Available online 6 June 2019

#### Keywords:

Adolescent health  
Developing country  
Health promotion  
Social media  
Wellbeing

### ABSTRACT

**Objectives:** Prolonged social media usage is linked to poor sleep among adolescents; however, little is known about these associations in developing countries. The aim of this study was to examine the associations of social media use with sleep duration and sleep disturbance among adolescents in Bangladesh. **Methods:** We used a self-administered survey to collect data on sleep duration and social media use from secondary school students in Dhaka, Bangladesh. Parents reported about their child's sleep disturbance. Binary logistic regression models were estimated to examine the associations.

**Results:** For every 10 minutes/day increase in social media use during school days, the odds of reporting sleep disturbance was increased by 14% (95% CI: 1.08–1.21). The odds of reporting sleep  $\leq 7$  h/day was increased by 3% (1.01–1.06) for every 10 minutes increase in social media use during weekend days.

**Conclusions:** Limiting social media use can be a pragmatic strategy to improve sleep, which can improve health and wellbeing of adolescents in urban Bangladesh.

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Social media usage has increased rapidly in recent years and has become an integrated part of the lives of contemporary youth [1]. Nine out of ten US adolescents aged 13–17 years, for example, use social media throughout the day spending about 54% of their time interacting with different online platforms [1,2]. Evidence is emerging in support of a link between social media use and various aspects of adolescent health and wellbeing including sleep and psychosocial health [2].

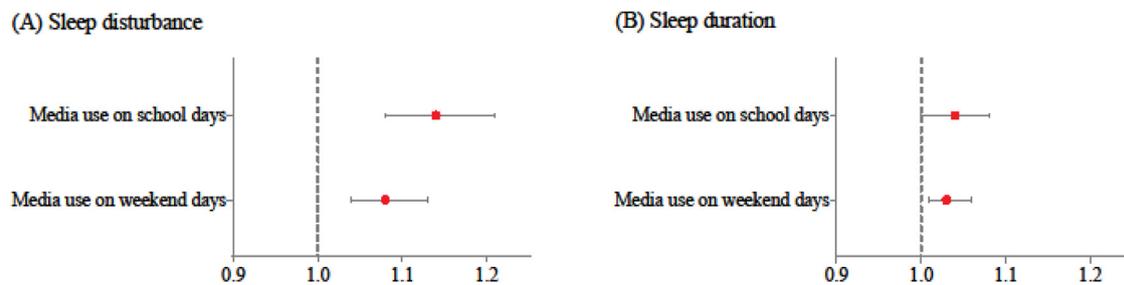
Sleep is important for adolescents' health and wellbeing including psychosocial and cognitive development [3]. Because of competing demands between sleep and social media time, adolescents who spend prolonged time on social platforms can impose "voluntary sleep restriction" on themselves, which can result in shorter sleep durations [4] and poor sleep quality [2]. Sleep problems among adolescents have been associated with poor psychological health, and impaired daytime functioning and school performance [3]. The potential adverse effects of social media on sleep, therefore, has emerged as a public health concern for adolescents in recent years.

In developing countries, social media has become increasingly popular, especially among young people [5]. For example, use of internet has increased from 42% in 2013–14 to 64% in 2017–18, while use of online social networking has increased from 34% to 53% during the same period in emerging and developing countries [5]. However, not much is known about the associations between social media use and sleep behaviours among adolescents in these countries. The current study aims to examine the associations of social media use with sleep duration and sleep disturbance among adolescents in Bangladesh.

Data for this study were extracted from a self-administered questionnaire survey of students aged 12–17 years from eight secondary schools in Dhaka, Bangladesh during 2012–2013. Students were asked, "How many average hours do you sleep in a usual night?". They were also asked about their duration of social media (e.g., Facebook, Instagram, Twitter) use on a usual school- and weekend-day. Students also provided their socio-demographic information, including age, gender, parental education. Parents were asked whether their child experienced any 'sleep disturbance' during the previous month with response options being 'yes', 'no', and 'not sure'. The parents also provided information on monthly family income. The students' height and weight were measured by the research team to compute body mass index (BMI). The study

\* Corresponding author at: School of Health and Rehabilitation Sciences, The University of Queensland, Therapies Annex, St Lucia, Brisbane, QLD 4072, Australia.

E-mail address: [a.khan2@uq.edu.au](mailto:a.khan2@uq.edu.au) (A. Khan).



**Fig. 1.** Associations<sup>#</sup> of social media use with sleep duration and sleep disturbance among adolescents in Dhaka, Bangladesh. <sup>#</sup>after adjusting for gender, age, mother's education, and family income.

was approved by The University of Queensland Ethics Committee, Australia.

Sleep duration was dichotomised based on a median (7 h) split, while sleep disturbance was dichotomised as 'yes' and 'no/not sure'. Social media use was converted into 10-minute time interval in order to facilitate better interpretation. Given the dichotomous nature of the outcome variables (sleep duration and disturbance), two binary logistic regression models were estimated to examine the associations.

Of the 1476 questionnaires distributed, 877 students completed the sleep duration question, and 867 parents completed the sleep disturbance question. The study sample (51% female) had an average age of  $14.3 \pm 1.14$  years. Two in five (40%) students reported having had an average of  $\leq 7$  h of sleep in a usual night, while 16% of the parents reported sleep disturbance of their children during the previous month. Prolonged social media use (2+ hours/day) was more common on weekend days (19.2%) than on schooldays (10%). Mean use of social media was 72.5 ( $\pm 64.7$ ) minutes/day during the school days and 104.7 ( $\pm 88.9$ ) minutes/day during the weekend days.

The multivariable analyses showed that for every 10-minutes/day increase in social media use during school days, the odds of reporting sleep disturbance was increased by 14% (95%CI: 1.08–1.21,  $p < 0.001$ ) (Fig 1). The odds of reporting daily sleep  $\leq 7$  h/day was increased by 3% for every 10-minutes increase in social media use during weekend days (1.01–1.06;  $p = 0.01$ ).

This is the first study, to our knowledge, in South Asia to report the associations between social media use and sleep problems among adolescents. The frequent use of social media among Bagladeshi adolescents is of particular concern due to its linkage with anxiety, stress, depression, low mood and self-esteem [6,7]. Our findings that social media use may reduce sleep duration and increase sleep disturbance among adolescents is consistent with other studies, which found positive associations between prolonged social media use and poor sleep [2] and short sleep duration [4]. Exposure to a screen before bedtime can interfere with the sleep-wake cycle delaying sleep onset, which may shorten sleep duration [2,4]. Nighttime-specific social media use has been linked to poorer sleep quality among adolescents [2]. However, social media can offer many psychosocial benefits (e.g., identity development, social connections, awareness) [8]. For example, adolescents may use social media to share their day-to-day experience at school, about personal relationships, and participation in sports and social events, and their views on various socio-cultural issues [8,9]. While this can help exercising creative thinking and expressing their thoughts and emotions, adolescents may also receive positive feedback from their peers, which can improve their social functioning and foster a sense of social inclusion [8,9]. Evidence also suggests that social media may have a decisive role in the prevention and management of chronic diseases in low- and middle-income countries through health education and information sharing, health awareness campaigns, and capacity

building of health professionals [8]. It is therefore essential to use social media in moderation and responsibly to ensure a safe and healthy digital life of adolescents.

A major limitation of our study is that sleep duration and disturbances were self-reported. Our study sample was from selected schools in an urban area, which may not represent all adolescents in Bangladesh. It was beyond the scope of this study to include digital media use (e.g., television, gaming device), which could affect sleep in adolescents. Furthermore, an association between social media use and sleep quality does not necessarily mean that social media use affects sleep duration and quality.

Given the exponential growth of social media platforms and their link with health outcomes, this study argues for healthy social media use for adolescents. Limiting social media time during school days can be a pragmatic strategy to improve sleep, and overall health and well-being of adolescents. Future research should use longitudinal design to examine the directionality of the associations with objective measures of sleep.

#### Acknowledgements

We are very grateful to everyone who participated in the study, Mahfuzul Kabir of Data Analysis and Technical Assistance, Bangladesh, for helping with the data entry and Parveen A Khanum, Shuhana Sultana, Nazneen A Khanum, Shanchita R Khan, and Areebah S Khan for helping with the data collection.

#### Author statements

#### Funding

None.

#### Competing interests

None declared.

#### Ethical approval

The procedures followed were in accordance with the ethical standards of the Declaration of Helsinki (1964, amended most recently in 2008) of the World Medical Association. Ethics approval was obtained from the University of Queensland Behavioural and Social Sciences Ethical Review Committee. Written informed consent was obtained from all study participants.

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