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**Original Research Article**

# Effect of bedtime social media use on quality of sleep among adolescents in selected schools and pre-university colleges, Bangalore

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## ABSTRACT

**Background:** Social media has grown extensively among the adolescent population. However, excessive use at bedtime is reported to affect their quality of sleep. Sleep is very important for the normal growth and development of a child; meanwhile, inadequate sleep poses numerous health risks. The study was conducted with the objective to assess the impact of bedtime social media usage on the quality of sleep among adolescents and to find the relationship with socio-demographic variables.
**Methods:** A descriptive survey was conducted for the study. Non-probability purposive sampling technique along with inclusion and exclusion criteria was used to select 150 adolescents. Socio-demographic data and Pittsburgh sleep quality index (PSQI) were administered to assess bedtime social media use and quality of sleep.
**Results:** There was a weak positive correlation (r=0.262) between bedtime social media use and quality of sleep which is statistically significant (p=0.001). A statistically significant association was found between quality of sleep and standard (p=0.003), usual bedtime for the past month (p=0.000), hours slept during weekdays (p=0.000), and hours of social media use at bedtime (p=0.000).
**Conclusions:** Regardless of the health risk posed by inadequate sleep due to overindulgence of social media at bedtime, its exploitation among adolescents is still on the rise. Therefore, the findings suggest that it is very crucial to give awareness and education regarding healthy use of social media and good quality of sleep in order to live a healthy and productive life in the future.

**Keywords:** Bedtime social media, Quality of sleep, Adolescents

## INTRODUCTION

"Adolescence is the phase of life between childhood and adulthood, a unique stage of human development and an important time for laying the foundations of good health. Adolescents experience rapid physical, cognitive and psychosocial growth." Amidst this phase, they establish patterns of behaviour that can protect their good health such as adequate nutrition and sleep, exercise, healthy lifestyle, healthy weight and fine scholastic performance and so on, or else put their health at risk now and future.[1]

Adolescence was referred to as "storm and stress" by American psychologist and educator Stanley Hall in 1904. He described to an adolescent's reduced level of self-control as the "storm" and their heightened sensitivity as the "stress".[2] Literature also says that adolescents are susceptible to numerous social and psychological issues including depression, anxiety, social isolation, loneliness, stress, academic pressure, etc. The majority of adolescents use social media to escape from the harsh reality and stay connected with friends.

"Social media refers to a kind of technology and website that provides platform for accessing information, sharing ideas, and promoting communication."[3] Individuals of all ages use it widely and it has become a prerequisite in today's generation. However, overuse or use of social media at bedtime is said to affect their quality of sleep.

Sleep foundation states that sleep is a prerequisite for adolescents as it plays an important role in their physical and mental development. It is vital for the normal functioning of their body and to lead a healthy lifestyle. However, insufficient/inadequate sleep poses an important and complicated set of health risks in the adolescent population.[4] Regardless of health risk posed by inadequate sleep due to excessive screen time at bedtime, use of social media has increased tremendously among adolescents over the period due to nature of adolescents being easily influenced by their peers and current trends.

Very few previous studies relating to bedtime use were done and were more focused on overall social media use and quality of sleep. Therefore, further studies need to be conducted to assess the quality of sleep specifically analysing social media use at bedtime. Hence, in this study, the researcher intends to assess the frequency, type, and duration of social media use at bedtime and its impact on the quality of sleep among adolescents to plan an awareness programme for adolescents and their families based on standard guidelines so as to reduce the problems due to poor sleep quality.

## METHODS

A descriptive survey was conducted for the study. It was conducted at St Lourdes high school and Jyothi PU college, Bangalore. The 150 adolescents between 12-18 years were selected using a non-probability purposive sampling technique to participate in the study.

### *Inclusion criteria*

Adolescents belonging the age group of 12-18 years, use social media at bedtime and students who are willing to participate were included.

### *Exclusion criteria*

The students who are diagnosed with psychiatric and sleep disorders and those who are not available at the time of data collection were excluded.

### *Description of tool*

The tool consists of two sections:

### *Section A: socio-demographic data*

It includes age, gender, standard of studying, type of family, monthly family income, living arrangement, whether they have their own phone, do parents impose restrictions on mobile usage, time of going to bed for the past month, hours of sleep at weekday and weekend, hours of social media usage at bedtime, type of social media used, do they suffer from any medical conditions or whether they are under any medications.

### *Section B: PSQI*

The PSQI was developed by researchers at the university of Pittsburgh to assess the quality of sleep in 1989. It is a self-administered questionnaire that includes 19 questions and 5 questions rated by the bedpartner or roommate. The latter 5 questions are used for clinical information only and are not tabulated in the scoring of PSQI of this study. The questions assess a wide variety of factors namely sleep quality, estimates of sleep duration, sleep latency, and frequency and severity of specific sleep-related problems.[5]

### *Content validity*

The content validity was obtained from 9 experts (7 nurse experts, 1 paediatrician, and 1 psychologist). The tool was modified as per their suggestions which included reframing a few questions.

### *Reliability*

Tool's reliability was determined through internal consistency using Cronbach's alpha, and obtained coefficient alpha value was 0.72.

### *Pilot study*

The pilot study was conducted at Balak English School, Bangalore. On completion, the study was found to be feasible and practicable to proceed with the main study.

### *Data collection*

The data collection was carried out from 1st January 2024 to 4th February 2024. Formal permission was obtained from both the principals of St Lourdes high school and Jyothi PU college. Informed consent and assent were taken from the parents and adolescents respectively. The participants were subjected to a preliminary screening questionnaire. After which socio-demographic data sheet and the PSQI were administered. Participants were requested to answer the research tool completely. The average time taken to complete all the questionnaires by the participants was 20-25 minutes. Data collected was entered in the master sheet and coding was done.

### *Statistical analysis*

Data was analysed using SPSS version 20. Frequency and percentage distribution were used to describe the socio-demographic variables and quality of sleep. Karl Pearson's correlation coefficient was used to find the

correlation between the duration of bedtime social media use and quality of sleep and the chi-square test was used to find the association between quality of sleep with selected socio-demographic variables.

## RESULTS

### *Socio-demographic variables of participants*

Out of 150 participants, 60.70% (91) were in age group 12-15 years and 39.30% (59) belonged to 16 and 18 years of age. 56.70% (85) were females and 43.30% (65) were males, 40.6% (61) in 9-10$^{th}$ std, 35.4% (53) in 11-12$^{th}$ std and 24% (36) were in 7-8$^{th}$ std. 78.7% (118) belong to nuclear family while 21.3% (32) to joint family. Majority i.e., 95.3% (143) live with parents, 2% (3) live with grandparents, 2% (3) live with others and 0.7% (1) live alone. Most of the them i.e., 35.3% (53) had family income between Rs. 25,00-50,000, 24% (36) income <Rs. 25,000 and Rs. 50,000-1 lakh, 16.6% (25) family income >1 lakh. More than half i.e., 62.7% (94) had their own phone while 37.3% (56) did not have their own phone. 74% (111) of the participants had parental restrictions in the utilization of mobile phones at bedtime. The majority of participants 59.35% (89) sleep between 10 pm-12 am, 16.7% (25) between 8-10 pm, 12.7% (19) between 12-2 am, and only 11.3% (17) sleep after 2 am. Majority of participants 33.3% (50) slept for 6-7 hours during weekdays, 29.3% (44) slept >7 hours, 22.7% (34) slept 5-6 hours and 14.7% (22) slept <5 hours. More than one-third i.e., 80% (120) of participants sleep >7 hours during the weekend, 10% (15) sleep 6-7 hours, 8.7% (13) sleep 5-6 hours, and only 1.3% (2) sleep <5 hours. Almost half of participants 46% (69) use social media <1 hour at bedtime, and 34.7% (52) use 1-2 hours. 13.3% (20) use 2-3 hours and 6% (9) use >3 hours. The majority 96% (144) of participants did not have any medical conditions while only 4% (6) had medical conditions. Lastly, 94% (141) of participants did not take any medications while 6% (9) participants took medications for minor ailments.

**Table 1: Frequency and percentage distribution of socio-demographic variables of participants, (n=150).**

| Socio demographic variables | Frequency | Percentage (%) |
|---|---|---|
| **Age (in years)** | | |
| 12-15 | 91 | 60.7 |
| 16-18 | 59 | 39.3 |
| **Gender** | | |
| Male | 65 | 43.3 |
| Female | 85 | 56.7 |
| **Standard** | | |
| 7-8 | 36 | 24 |
| 9-10 | 61 | 40.6 |
| 11-12 | 53 | 35.4 |
| **Type of family** | | |
| Nuclear | 118 | 78.7 |
| Joint | 32 | 21.3 |
| **What are your living arrangements?** | | |
| Living with parent | 143 | 95.3 |
| Living with grandparents | 3 | 2.0 |
| Living alone | 1 | 0.7 |
| Living with roommates in PG or hostel | 0 | 0 |
| Others | 3 | 2.0 |
| **Monthly family income in rupees** | | |
| <25,000 | 36 | 24.0 |
| 25,000-50,000 | 53 | 35.3 |
| 50,000-1 lakh | 36 | 24.0 |
| >1 lakh | 25 | 16.7 |
| **Do you have your own mobile phone?** | | |
| Yes | 94 | 62.7 |
| No | 56 | 37.3 |
| **Do your parents restrict your mobile time?** | | |
| Yes | 111 | 74.0 |
| No | 39 | 26.0 |
| **For the past month at what time do you usually go to bed?** | | |
| 8 pm-10 pm | 25 | 16.7 |
| 10 pm-12 am | 89 | 59.35 |
| 12 am-2 am | 19 | 12.7 |
| After 2 am | 17 | 11.3 |

Continued.

| Socio demographic variables | Frequency | Percentage (%) |
|---|---|---|
| **How long do you sleep during?** | | |
| Weekdays | | |
| <5 hours | 22 | 14.7 |
| 5-6 hours | 34 | 22.7 |
| 6-7 hours | 50 | 33.3 |
| >7 hours | 44 | 29.3 |
| Weekend | | |
| <5 hours | 2 | 1.3 |
| 5-6 hours | 13 | 8.7 |
| 6-7 hours | 15 | 10 |
| >7 hours | 120 | 80 |
| **How many hours do you use social media before going to bed per night?** | | |
| <1 hour | 69 | 46 |
| 1-2 hour | 52 | 34.7 |
| 2-3 hour | 20 | 13.3 |
| >3 hour | 9 | 6.0 |
| **Do you suffer from any medical condition that disturbs your sleep at night?** | | |
| Yes | 6 | 4.0 |
| No | 114 | 96.0 |
| **Are you currently on any medications?** | | |
| Yes | 9 | 6.0 |
| No | 141 | 94.0 |

***Frequency distribution of participants with regard to the type of social media used***

Instagram is used most commonly by adolescent population with 115 out of 150 participants using this social media and the second is Snapchat with 84 participants using it.

**Table 2: Frequency distribution of the participants with regard to the type of the social media used, (n=150).**

| Type of social media used | N |
|---|---|
| **Instagram** | 115 |
| **Facebook** | 19 |
| **WhatsApp** | 72 |
| **Snapchat** | 84 |
| **Twitter** | 6 |

***Frequency and percentage distribution of quality of sleep among participants***

Among 150 participants, 60.7% (91) had poor quality of sleep, whereas 39.3% (59) of the participants had good sleep quality according to the PSQI.

***Correlation between duration of bedtime social media use and quality of sleep***

There was a weak positive correlation between bedtime social media use and quality of sleep which is statistically significant as the p=0.001.


**Figure 1: Frequency and percentage distribution of quality of sleep among participants, (n=150).**

**Table 3: Correlation between duration of bedtime social media use and quality of sleep, (n=150).**

| Variables | Correlation | P value |
|---|---|---|
| **Duration of bedtime social media use** | 0.262 | 0.001* |
| **Quality of sleep** | | |

*P value=Significant

***Association between the quality of sleep and selected socio-demographic variables***

The finding shows that there was a statistically significant association between quality of sleep and certain demographic variables such as standard of studying (p=0.003), usual bedtime for the past month (p=0.000), hours slept during weekdays (p=0.000), hours of social media use before going to bed (p=0.000).

However, no association was found between quality of sleep and other socio-demographic variables.

**Table 4: Association between the quality of sleep and selected socio-demographic variables, (n=150).**

| Variables | PSQI global scores | | Chi square value ($\chi^2$) | P value |
|---|---|---|---|---|
| | 0-4 | 5-21 | | |
| **Standard** | | | | |
| 7-8 | 19 | 15 | 11.629, df (2) | 0.003* |
| 9-10 | 15 | 48 | | |
| 11-12 | 25 | 28 | | |
| **For the past month at what time do you usually go to bed?** | | | | |
| 8 pm-10 pm | 15 | 10 | 21.602, df (3) | 0.000* |
| 10 pm-12 am | 41 | 48 | | |
| 12 am-2 am | 3 | 16 | | |
| After 2 am | 0 | 17 | | |
| **How long do you sleep during?** | | | | |
| Weekdays | | | | |
| <5 hours | 2 | 20 | 23.908, df (3) | 0.000* |
| 5-6hours | 6 | 28 | | |
| 6-7hours | 27 | 23 | | |
| >7 hours | 24 | 20 | | |
| **How many hours do you use social media before going to bed per night?** | | | | |
| <1 hour | 40 | 29 | 19.247, df (3) | 0.000* |
| 1-2 hour | 13 | 39 | | |
| 2-3 hour | 5 | 15 | | |
| >3 hour | 1 | 8 | | |

*P value=Significant

## DISCUSSION

The findings of the study show that among 150 adolescents, 46% of the participants use social media <1 hour, 34.7% use 1-2 hours, 13.3% use 2-3 hours, and 6% use >3 hours. And Instagram is the most commonly used social media with 115 out of 150 participants using this social media. The above findings of the study are consistent with an in-depth survey conducted by pew research centre among American teens and their parents in which they reported two-thirds of teens use TikTok, followed by six in ten teens reported using Instagram (62%) and Snapchat (59%). A smaller number of teens say they have ever used Twitter (23%), WhatsApp (17%), Reddit (14%) and Tumblr (5%).[6] The finding of the study is also supported by a cross-sectional millennium cohort study on social media use and adolescent sleep patterns from the UK which utilizes data from 11 872 adolescents (aged 13-15 years) in analyses that revealed that the average social media use was 1 to <3 hours per day (31.6%, n=3720). 33.7% were grouped as low users (<1 hour; n=3986); 13.9% of the adolescents were high users (3 to <5 hours; n=1602) and 20.8% were very high users (5+ hours; n=2203).[7]

The study finding shows that among 150 participants, 39.3% of the participants had good quality sleep whereas 60.7% of the participants had poor-quality sleep. This finding is consistent with a study conducted in 2019 in New Delhi on sleep quality assessment of adolescents which shows that among 620 adolescents aged 10-19 years, only 7.3% of adolescents were found to be poor sleepers. Poor quality of sleep was observed to be higher during school days than during vacation (9.3%, and 6.5%, respectively). Adolescents whose ages are equal to and >15 years have a higher possibility of having poor sleep quality than those younger than 15 years of age.[8]

The study finding shows that there was a weak positive correlation between bedtime social media use and quality of sleep which was statistically significant (r=0.262, p=0.001). It is supported by a cross-sectional cluster-sampling study on social media use and sleep disturbance among 576 high schools in 2019 in Iran in which the relationship between poor sleep quality with social media use was statistically significant (p=0.02). In addition, there was a reverse correlation between the average use of electronic devices and sleep duration (Spearman's rho=0.17; p=0.03).[9]

The finding of the study shows that there was a statistically significant association between the quality of sleep and certain demographic variables such as standard of studying (p=0.003), usual bedtime for the past month (p=0.000), hours slept during weekday (p=0.000), hours of social media use before going to bed (p=0.000). However, no association was found between quality of sleep and other socio-demographic variables. Similarly, the finding of the study is also supported by a descriptive study conducted on the impact of the usage of bedtime social media on the quality of sleep among medical undergraduates which shows that the association between social networking time and sleep quality was statistically highly significant at $\chi^2$=32.109, p<0.001. Therefore, the study concluded that the quality of sleep was significantly affected by the usage of social media.[3]

***Limitations***

Authenticity of the information is based on the response of the participants. Generalization of the findings is limited to the setting. The findings of the study may also be affected by certain factors like academics in terms of tests and exams of the participants.

## CONCLUSION

The present study concluded that regardless of the health risk posed by inadequate sleep due to overindulgence of social media at bedtime, its exploitation among adolescents is still on the rise. It is therefore very crucial to give education to the family members and adolescents themselves regarding healthy use of social media and good quality of sleep in order to live a healthy and productive life in the future.

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