PREVALENCE OF SLEEP QUALITY AMONG ADOLESCENTS OF SELECTED SCHOOLS IN BELAGAVI CITY, KARNATAKA

Mr. Jagadeesh G Hubballi[1], Mrs. Shubharani S Muragod[2], Megha Acharya[3], Aishwarya Badiger[4], Akshata Kangutkar[5], Akash Karaguppi[6], Albin Kuriakose[7]

[1]Assistant Professor. KLE Academy of Higher Education & Research (KAHER) Institute of Nursing Sciences, Belagavi., jagadeesh@kleunursingbgm.edu.in
[2]Assistant Professor. KLE Academy of Higher Education & Research (KAHER) Institute of Nursing Sciences, Belagavi, shubharani@kleunursingbgm.edu.in
[3]UG Student. KLE Academy of Higher Education & Research (KAHER) Institute of Nursing Sciences, Belagavi, meghasacharyaa@gmail.com
[4]UG Student. KLE Academy of Higher Education & Research (KAHER) Institute of Nursing Sciences, Belagavi, aishwaryabadiger132@gmail.com
[5]UG Student. KLE Academy of Higher Education & Research (KAHER) Institute of Nursing Sciences, Belagavi, akshatakangutkar046@gmail.com
[6]UG Student. KLE Academy of Higher Education & Research (KAHER) Institute of Nursing Sciences, Belagavi, akashkaraguppi100@gmail.com
[7]UG Student. KLE Academy of Higher Education & Research (KAHER) Institute of Nursing Sciences, Belagavi, albinrejikuriakose1@gmail.com

Abstract

Background: Adolescent's physical and mental growth depends on getting enough sleep. It is regarded as one of the main elements that contribute to the well-being of one's physical and mental health, particularly in teens. Even while adolescents still require sleep. It has been calculated that adolescents require up to 9.2 hours of sleep every day. Moreover, over half of adolescents experience poor sleep quality, and sleep issues are widespread among them. Thus, it can be said that among adolescents, getting poor-quality sleep is becoming a serious issue. Bedtime, wake-up time, and length of sleep are examples of sleep patterns. Adolescents who do not get enough sleep are more prone to being impulsive, hyperactive, distracted, inattentive, and uninterested. Inadequate sleep has been linked to obesity, stunted growth, poor nutrition, inadequate sustenance, and mental health problems. In adolescents, daytime restlessness and mental health have an impact on overall sleep duration. When it comes to academic achievement, enough sleep is superior to inadequate sleep.

Methods: A descriptive cross-sectional study conducted on 1000 adolescents between the ages of 12 and 17 participated in the study. Students were given a questionnaire with demographic data and items from the PSQI scale. The main parameters evaluated were seven: subjective sleep quality, subjective sleep latency, length, habitual sleep efficiency, sleep disruptions, use of sleeping drugs, and dysfunction during the day.

Results: The study findings indicate there was a significant association between age (X^2 = 21.30, df=4, p<0.001), gender (X^2 = 6.30, df=1, p=0.001), and family type (X^2 = 13.42, df=1, p<0.001) with poor sleep quality. Furthermore, the results indicate there was a significant association between low-quality sleep and sickness (X^2 = 18.96, df = 1, p<0.001), as well as between mobile screen time (X^2 = 19.65, df = 1, p<0.001) and poor sleep quality.

Conclusion: In this study, the prevalence of poor sleep quality was found to be relatively high (21.0%).

Keywords: Sleep latency, Stressful life events, Sleep duration, Daytime dysfunction, Sleep disturbances, Adolescents.

Introduction

Adolescents' physical and mental growth depends on sleep. It is regarded as one of the main contributing aspects to the welfare of both physical and mental health, particularly in teens. Although the word "sleep quality" is often used, it lacks a generally agreed definition. Generally speaking, it is defined as an individual's overall degree of pleasure with their sleep experience, with the three main components being the amount of sleep, the continuity of the sleep, and the sensation of renewal upon awakening. Even while adolescents still require sleep, there is a steady fall in sleep duration as children become adolescents[1]. It has been calculated that adolescents require up to 9.2 hours of sleep every day. Moreover, over half of college students experience poor sleep quality, and sleep issues are widespread among them. Thus, it can be said that college students are increasingly experiencing problems related to low-quality sleep. Teenagers between the ages of 10 and 19 who don't get enough sleep are starting to cause serious global worry. The majority of the childhood-to-adolescent transition period takes place in the classroom. There will be changes in the biochemical, physical, and psychological components of adolescence throughout this phase of transition.5–6 Adolescents

experience growing pressures throughout this time from their families, schools, social networks, and even the environment[2]. Poor sleep quality affects 10% to 40% of children and adolescents globally[3]. Teenagers' overall sleep duration is impacted by daytime restlessness and mental well-being. When compared to inadequate sleep, adequate sleep improves academic and scholastic performance[4]. The socioeconomic condition of the family, the parents' educational level, and the family structure are significant risk factors linked to teenagers in secondary schools having poor sleep quality. According to a recent survey, 35% of Indians had internet connectivity in 2017[5], while 92.8% of households owned a mobile phone. The country's 12 to 19-year-old age cohort accounted for roughly one-third (32%) of all internet users, with over two-thirds (67%) falling into this age range[6,7]. The purpose of this study was to ascertain the frequency and contributing variables to poor sleep quality among secondary school students in Belagavi City of Karnataka.

Materials and methods: This cross-sectional study was conducted between December 2022 to February 2023 among secondary school students in Belagavi city, The list of all secondary schools in Belagavi city had been used as a sampling frame. Students who were on medical leave during the data collection were excluded from this study.

Sample Size and Sampling Technique:
A formula using two proportions was used to estimate the sample size. This survey required 990 responses, rounded to the nearest 1000. In order to choose the schools for this investigation, a probability proportionate to size sampling strategy was employed.

Data collection: The goals and aim of the study were explained to the participants after they had received information regarding the PSQI scale items, sleep quality, and demographics. The research subjects gave their informed consent. The data was gathered by administering Tool. The period of data collection was December 2022–February 2023. All adolscent's in the sample population within the specified age range were included; students who declined to participate in the study or were on medical leave at the time of data collection were excluded.

Students were given a questionnaire with demographic data and items from the PSQI scale. The main parameters evaluated were seven: subjective sleep quality, subjective sleep latency, length, habitual sleep efficiency, sleep disruptions, use of sleeping drugs, and dysfunction during the day. SPSS software was used to analyse the data.

Results:

Table 1: Characteristics of secondary school students (n=1000)

Sociodemographic characteristics	N	%
Age		
12 to<13	91	9.1
13 to <14	233	23.3
14 to <15	303	30.3
15 to <16	107	10.7
16 to <17	266	26.6
Gender		
Male	551	55.1
Female	449	44.9
Area of Residence		
Urban	719	71.9
Rural	281	28.1
Education level of the father		
Primary school	23	2.3
Secondary school	58	5.8
Graduate	523	52.3
Post Graduate	396	39.6
Education level of the mother		
Primary school	55	5.5
Secondary school	189	18.9
Graduate	683	68.3
Post Graduate	73	7.3
Type of Family		
Nuclear Family	853	85.3
Joint family	147	14.7
Illness		
With illness	479	47.9
Without illness	521	52.1
Mobile screen time		
=>2 hours	668	66.8
< 2 hours	332	33.2

Table 1 shows that the majority of respondents (30.3%) were in the 14–15 age range, the most were male (55.1%), and the majority were from urban areas (71.9%). The majority of those surveyed (85.3%) belonged to a nuclear family. Mothers (68.3%) and fathers (52.3%) with graduate degrees make up the majority of responders. The majority of the children's (52.1) were healthy. 66.7 % of the respondents reported using their phones for screens for at =>2 hourshours per day.

Table 2: Distribution of respondents by sleep quality elements

Elements of sleep quality	N	%
Subjective sleep quality		
Very good	390	39.0
Fairly good	481	48.1
Fairly bad	104	10.4
Very bad	25	2.5
Sleep latency (minutes)		
≤ 15	314	31.4
16-30	465	46.5
31-60	221	22.1
Sleep duration (hours)		
> 7	656	65.6
6-7	196	19.6
5-6	118	11.8
< 5	30	3.0
Habitual sleep efficiency (%)		
> 85	977	97.7
75%-85	23	2.3
65%-75	0	0.0
<65	0	0.0
Sleep disturbance		
None	210	21.0
Mild	778	77.8
Moderate	12	1.2
Severe	0	0.0
Use of sleep medication		
None	1000	100.0
Mild	0	0.0

Moderate	0	0.0
Severe	0	0.0
Daytime dysfunction		
None	753	75.3
Mild	187	18.7
Moderate	60	6.0
Severe	0	0.0
Total PSQI Global score		
≤ 5 (Good sleep quality)	789	78.9
> 5 (Poor sleep quality)	211	21.1

Table 2 displays the respondents' distribution according to the Pittsburgh Sleep Quality Index (PSQI) global score and sleep quality aspects. There was the measurement of seven aspects of sleep quality. Eighty-one percent of the respondents said their subjective sleep quality was either very good or fairly good. 104 (10.4%) out of 1,000 respondents said their subjective sleep quality was fairly poor. Merely 2.5% (n=25) of the participants reported really poor subjective sleep quality. 314 (31.4%) respondents reported having sleep latency shorter than 15 minutes, 221 (22.1%) respondents reported having sleep delay between 31 and 60 minutes, and nearly half of the respondents (n=465, 46.5%) reported having sleep latency between 16 and 30 minutes. The majority of respondents (n = 656, 65.6%) reported sleeping for more than seven hours every day. 196 (19.6%) of the 1,000 respondents reported getting 6 to 7 hours of sleep per day, whereas 118 (11.8) reported getting 5 to 6 hours per day. Merely 3.0% of the participants reported sleeping for less than five hours. Every responder stated that their regular sleep routines were the most effective. While 210 respondents (21.0%) reported no sleep difficulty, the majority of respondents (77.8%) reported having minor sleep disturbances. Just 12 out of the total respondents (1.2%) reported having moderate sleep disturbances. To fall asleep, none of the responders took any medicine. While 187 respondents (18.7%) indicated they had minor daytime dysfunction, more than half of the respondents (75.3%) reported having no daytime disruption. Merely 6.0% of the participants demonstrated signs of mild diurnal disruption. Just 21.1% of respondents reported having bad sleep quality, compared to the majority of 78.9% who reported having good sleep quality.

Table 3: Prevalence of poor sleep quality by socio-demographic factors

Socio-demographic	**Sleep quality**			
	Poor		**Good**	
	N=211	21.0%	**N=789**	79.0%
Age				
12 to<13	17	(8.0)	74	(9.3)
13 to <14	43	(20.3)	190	(24.0)
14 to <15	51	(24.1)	252	(31.9)
15 to <16	31	(14.6)	76	(9.6)
16 to <17	69	(32.7)	197	(24.9)
Gender				
Male	97	(45.9)	454	(57.5)
Female	114	(54.0)	335	(42.4)
Area of Residence				
Urban	143	(67.7)	576	(73.0)
Rural	68	(32.2)	213	(26.9)
Education level of the father				
Primary school	7	(0.3)	16	(0.2)
Secondary school	15	(0.7)	43	(0.5)
Graduate	166	(78.6)	357	(45.2)
Post Graduate	23	(10,9)	373	(47.2)
Education level of the mother				
Primary school	38	(18.0)	17	(0.2)
Secondary school	71	(33.6)	118	(14.9)
Graduate	83	(39.3)	600	(76.0)
Post Graduate	19	(0.9)	54	(0.6)
Type of Family				
Nuclear Family	158	(74.8)	695	(88.0)
Joint family	53	(25.2)	94	(11.9)
Illness				
With illness	79	(37.4)	400	(50.6)
Without illness	132	(16.7)	389	(49.3)
Mobile screen time				
=>2 hours	73	(34.5)	595	(75.4)
< 2 hours	138	(65.4)	194	(24.5)

Table 3 displays the prevalence of poor sleep quality by age, gender, parental educational attainment, family structure, teenage illness, and time spent on mobile devices. The age group of 16 to <17 years respondents had the highest prevalence of poor sleep quality (34.1%), followed by those of 15 to <16 years (279.9%), 14 to <15 years (21.5%), and those of 13 to <14 years (18.4%) in the age group of 12 to <13 years respondents. In comparison to male respondents (21.3%), female respondents had the highest rate of poor sleep quality (28.1%). In addition, it was discovered that women were more likely than men to have poor sleep quality (54.0%). It was discovered that urban areas had a greater rate of poor sleep quality based on residential location. Fathers and moms with doctorate degrees were more likely to report having poor sleep quality (78.6% vs. 39.3%). According to the respondents' family type—nuclear—74.8 percent reported having bad sleep quality, 79% reported having poor sleep quality with illness, and 34.5% reported having poor sleep quality with =>2 hours spent on mobile screens.

Table 4: Factors associated with poor sleep quality

Factors	Sleep quality				X^2	Df	p-value
	Poor		Good				
	N	(%)	N	(%)			
Age					21.30	4	< 0.001*
12 to<13	17	(8.0)	74	(9.3)			
13 to <14	43	(20.3)	190	(24.0)			
14 to <15	51	(24.1)	252	(31.9)			
15 to <16	31	(14.6)	76	(9.6)			
16 to <17	69	(32.7)	197	(24.9)			
Gender					6.30	1	< 0.001*
Male	97	(45.9)	454	(57.5)			
Female	114	(54.0)	335	(42.4)			
Area of Residence					3.32	1	0.327
Urban	143	(67.7)	576	(73.0)			
Rural	68	(32.2)	213	(26.9)			
Education level of the father					2.13	3	0.084
Primary school	7	(0.3)	16	(0.2)			
Secondary school	15	(0.7)	43	(0.5)			
Graduate	166	(78.6)	357	(45.2)			
Post Graduate	23	(10,9)	373	(47.2)			
Education level of the mother					1.17	3	0.084
Primary school	38	(18.0)	17	(0.2)			
Secondary school	71	(33.6)	118	(14.9)			
Graduate	83	(39.3)	600	(76.0)			
Post Graduate	19	(0.9)	54	(0.6)			
Type of Family					13.42	1	< 0.001*
Nuclear Family	158	(74.8)	695	(88.0)			
Joint family	53	(25.2)	94	(11.9)			
Illness					18.96	1	< 0.001*
With illness	79	(37.4)	400	(50.6)			
Without illness	132	(16.7)	389	(49.3)			
Mobile screen time					19.65	1	< 0.001*
=>2 hours	73	(34.5)	595	(75.4)			
< 2 hours	138	(65.4)	194	(24.5)			

Table 4 lists the variables linked to insufficient sleep. The findings indicate a there was a significant association between age (X^2 = 21.30, df=4, p<0.001), gender (X^2 = 6.30, df=1, p=0.001), and family type (X^2 = 13.42, df=1, p<0.001) with poor sleep quality. Furthermore, the results indicate there was a significant association between low-quality sleep and sickness (X^2 = 18.96, df = 1, p<0.001), as well as between mobile screen time (X^2 = 19.65, df = 1, p<0.001) and poor sleep quality.

Discussion:

In Belagavi city, 21.0% of secondary school pupils reported having poor sleep quality. This amount was less than the research conducted in Malasia and published in the journals by Appanna Kesintha, Lekhraj Rampal, et al. (84.0%) and Joyalyn Joy, Anju Abraham, et al. (21.7%)[7].

Additionally, this study showed that the prevalence of poor sleep quality varied with age. Students in secondary education show a strong correlation between age and poor sleep quality. This result was consistent with Gomesa GC, Passosb MH et al.'s earlier research[8].

According to the study's findings, there are gender differences in the prevalence of poor sleep quality, with women more likely than men to experience it. In a similar vein, Xu et al.'s study found a strong correlation between gender and poor sleep

quality[8]. The same conclusion—that gender and poor sleep quality were substantially associated—was also made by Gomesa et al. in another investigation[9].

The results of this study showed that the prevalence of poor sleep quality varied depending on the kind of family, with nuclear families having a higher incidence than joint families.

According to the study's findings, 34.5% of people who used their phones for longer than two hours each night reported having poor sleep quality. the comparable discovery made by Twenge JM, Hisler GC, et al. A greater percentage of adolescents and young people—13.90 and 25.59% of male adolescents and 3.76 and 5.79% of female adolescents—reported using their phones more frequently each day than was advised to minimize the harmful effects of screen time on their health in earlier research[10].

Conclusion:

In this study, the prevalence of poor sleep quality was found to be relatively high (21.0%). The age range of 16 to <17 years old had the highest prevalence of poor sleep quality, with 34.1% of respondents falling into this category. Female respondents had the highest prevalence of poor sleep quality, at 28.1%, compared to male respondents' 21.3%. Fathers and moms with doctorate degrees were more likely to report having poor sleep quality (78.6% vs. 39.3%). According to the respondents' family type—nuclear—74.8 percent reported having bad sleep quality, 79% reported having poor sleep quality with illness, and 34.5% reported having poor sleep quality with =>2 hours spent on mobile screens.

References

1. Khazaie H, Zakiei A, Rezaei M, Komasi S, Brand S. Sleep pattern, common bedtime problems, and related factors among first-grade students: Epidemiology and predictors. Clin Epidemiol Glob Health. 2019;7(4):546-51. doi: 10.1016/j.cegh.2018.12.007.

2. Gautam Prayas, et al. "Sleep Quality and Its Correlates among Adolescents of Western Nepal: A Population-Based Study." Sleep disorders. 2021. 5590715. doi:10.1155/2021/5590715.

3. Murugesan G, Karthigeyan L, Selvagandhi PK, Gopichandran V. Sleep patterns, hygiene and daytime sleepiness among adolescent school-goers in three districts of Tamil Nadu: A descriptive study. Natl Med J India. 2018;31(4):196-200. doi: 10.4103/0970-258X.258216, PMID 31134922.

4. Dubey M, Nongkynrih B, Gupta SK, Kalaivani M, Goswami AK, Salve HR. Sleep quality assessment of adolescents residing in an urban resettlement colony, New Delhi, India. Indian J Community Med. 2019;44(3):271-6. doi: 10.4103/ijcm.IJCM_87_19, PMID 31602118.

5. Murugiah P. Internet usage in India: the global analytics. In: Measuring and Implementing Altmetrics in Library and Information Science Research. India: IGI Global; 2020. p. 29–37.

6. Statista. Internet usage in India – Statistics and Facts 2020 https://www. statista.com/statistics/309866/india-digital-population/.

7. Population Council. Exploring the digital divide access to and use of mobile phones, the internet, and social media by adolescents and young adults in Bihar. New Delhi: Population Council; 2020.

8. Xu Z, Su H, Zou Y, Chen J, Wu J, Chang W. Sleep quality of Chinese adolescents; distribution and its associated factors. J Paediatr Child Health 2011; 48: 138-45.

9. Gomesa GC, Passosb MHP, Silvab HA, Oliveirab VM, Novaesa WA, Pitanguib ACR et al. Sleep quality and its association with psychological symptoms in adolescents' athletes. Rev Paul Pediatr 2017; 35(3): 316-21.

10. Twenge JM, Hisler GC, Krizan Z. Associations between screen time and sleep duration are primarily driven by portable electronic devices: evidence from a population-based study of U.S. children ages 0–17. Sleep Med. 2019;56:211–8.