Research Article

A Multicentric study of sleep patterns and electronic media usage in adolescents

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Abstract

Introduction: Adequate healthy sleep is essential for adolescents' optimal cognitive, and emotional functions and physical health. With media overload and stimuli from electronic gadgets, multitasking and academic stress, students are sleeping for fewer hours, making them one of society's most sleep-deprived age groups. Association of Adolescent and Child Care in India (AACCI) conducts multicentric studies to survey the lifestyles of children and adolescents in India, which include the use of electronic media and sleep patterns. These results are shared with the management, teachers and parents and programs are held for them and the students to make them aware of the importance of improving sleep patterns and proper sleep hygiene and the risks of poor sleep habits.

Methods: This paper shows the results of a multicentric college study. This data was collected from participants of AACCI Life Skills Education (LSE) workshops conducted in six different colleges in India during the period 2008 and 2010. A standardized and validated Questionnaire on Life style has been created by AACCI for use in these multicentric surveys The sample comprised 289 college students from six groups – A) and B) 62 First year Junior college from Mumbai (age range 16-18 years; 32 students of high socioeconomic status from an elite college and 30 students from middle socio-economic status), C) 113 First-year medical students from Pune (age range 18-19 years), D) 32 students from Vocational college from Mumbai (age range 19-21 years), E) 40 Final year nursing college From Delhi (age range 19-24) and F) 42 M.Tech Post Graduate (PG) Engineering Hyderabad (age range 20-25 years).

Ethical clearance: Ethics approval was obtained from AACCI Institutional ethics committee.

Permission and consents: Prior permissions were taken from the college Principals to conduct the workshop, including parental permission for the participants below 18 years of age. Written assent (16-17 years) consent (>18 years) was obtained from the students by including it in the questionnaire form.

Statistical analysis: The data has not been analysed statistically, as the sample size at each centre was small and their backgrounds were different. Descriptive comparisons have been made across students' sleep patterns and electronic usage.

Results: Results indicated that students from the younger age group slept longer than those from the older group. Nursing and medical students had less sleep hours due to erratic schedules. PG engineering students had the most regular sleep hours. Regarding electronic devices, PG Engineering students used the computer and internet for >6 hours daily; nurses used the computer internet and mobile the least. Mumbai students watched Television the most while engineering students watched it the least. AACCI conducted workshops for these students to inculcate in them, a healthy lifestyle.

Keywords: adolescents, college students, sleep duration, lifestyle, electronic media

Abbreviations: AACCI, association of adolescent and child care in India; WHO, world health organization; HSE, high socio-economic status; MSE, middle socio-economic status; PG, post graduate; TV, Television

Introduction

Background: Today's adolescents and young adults (AYAs) are born as children of the digital world. In the past parents could monitor screen use as the computer and TV was shared by many members in the family which automatically limited the screen time. With the availability of individual smart phones, owned from a very young age, the parents have no control over the screen time and specially the use of screen at night in the bedroom of the AYAs. Very few are strict enough to keep the mobile off the bedroom at night. It is well known that the blue light of the screen of various devices supress the sleep hormone melatonin and this leads to sleep problems and difficulty in falling asleep. Since they have to get up early to go to school and college they end up getting insufficient sleep, rarely getting the healthy sleep of 7-8 hours and between 10 pm to 6 am as per the body circadium rhythm. And they accumulate a sleep debt. The International Classification of Sleep Disorders (ICSD-3), defines insufficient sleep as a curtailed sleep pattern that has persisted for at least three months for most days of the week, along with complaints of sleepiness during the day.[1] Sleep deprivation syndrome - that is due to insufficient sleep is well researched to be associated with various negative health effects like obesity, digestion problems and also can suffer from depressive symptoms.[1] Since it also causes irritability, short temper, poor concentration, poor memory etc. it affects academic performance and social relationships. Since insufficient sleep is prevalent across various age groups, it is considered to be a public health epidemic that

is often unrecognized and under-reported. With this in mind AACCI does multicentric youth behaviour surveys across India to understand their lifestyle including sleep patterns and electronic media use. The results are shared with the parents and school management and the students themselves to promote a healthy lifestyle – that includes healthy diet, adequate exercise and adequate sleep.

The World Health Organization (WHO) defines 'Adolescents' as individuals in the 10-19 years age group, Young adults as 20-24 years and 'Youth' as the 15-24 year age group.[2] Data indicates that adolescents comprise around 20% of the population in the South-East Asia region. In India, around 253 million adolescents belong to the age group of 10–19.[3] Since adolescence is a period of physical, sexual, psychosocial, and academic development, it is important that their transition from childhood to adulthood is smooth. However, there are certain risks to their health and well-being (WHO).

Sleep is essential for optimizing physical, cognitive, and emotional functioning of adolescents and young adults (AYAs). Adolescents are one of the most sleep-deprived age groups in society. With an overload of stimuli from media and electronic gadgets, multitasking, and academic stress, most students now are sleeping for fewer hours. This leads to sleep deprivation which has adverse effects on their mental, physical and emotional health. Excess or less sleep is a high-risk factor for obesity, diabetes and other lifestyle diseases.

The mission of The Association of Adolescent and child care in India (AACCI) founded in India in 2007-08 is the prevention of Lifestyle diseases through a Healthy lifestyle using the Life skill training approach. Workshops are conducted for adolescent and young adult students from various schools and colleges in various cities in India. Multicentric data on youth behaviors is collected from the participants to help build modules and programs for adolescents and children. The present study aimed to understand sleep and electronic media use habits of adolescents from different colleges, and plan intervention strategies for the same.

A classic study by Carskadon[4] indicated that although adolescents need more sleep than prepubertally, their sleep habits show a pattern of decreasing total sleep time, a tendency to delay the timing of sleep, and an increased level of daytime sleepiness. Additionally, insufficient sleep causes daytime sleepiness, vulnerability to catastrophic accidents, mood and behavior problems, increased vulnerability to drugs and alcohol, and the development of major disorders of the sleep/wake cycle. The development of circadian rhythms may also play a role in the phase delay teenagers commonly experience.[5] The primary conclusion is that many adolescents do not get enough sleep. Additionally, research has also found that inadequate sleep duration and poor sleep quality are important factors associated with depressive symptoms in adolescents.[6]

Puberty itself imposes a burden of increased daytime sleepiness with no change in nocturnal sleep. Hence, Mathew et al.[7] suggest that primary prevention approach should aim at spreading adequate awareness regarding the importance of sleep among students, parents, and teachers. Sleep debt can be overcome with midafternoon naps.[8]

Physiologically, shorter sleep duration during weekdays and late weekend sleeping hours are associated with smaller brain grey matter volumes in the frontal, anterior cingulate, and precuneus cortex regions.[9] Poor sleep can also have an adverse effect on academic performance.[10]

Additionally, excessive use of Electronic media has adverse effects on children and adolescents. Increased use of the same leads to lesser time spent in physical activity and decreased sleep. Hysing et al. (2015)[11] found a negative relationship between the use of technology and sleep, indicating that the use of electronic devices is frequent in adolescence, during the day as well as at bedtime. Research states that the most common prebedtime screen activities are social media and texting; most adolescents use phones in bed.[12]

Educational programs hold the promise of improving teenagers' sleep patterns by educating youngsters, parents, and pediatricians about proper sleep hygiene and the risks of poor sleep habits.[4] AACCI shares multicentric youth behaviors data with the school and college management and obtains permission to conduct intervention programs in schools and colleges for parents and teachers. Awareness and capacity building is undertaken to promote a healthy lifestyle including adequate healthy sleep, increased physical activity and reduced sedentary lifestyle by reducing in use of electronic media and understanding the adverse effects on mental and physical health.

Material and methods

Aims and objectives: To understand the lifestyle of the life skill skills education (LSE) workshop participants, including their pattern of sleep and electronic media use. AACCI has created a standardized life style questionnaire to be used in multicentric surveys. AACCI uses this data to plan interventions and create modules for conducting awareness programs in schools and colleges for parents, teachers and students promoting healthy lifestyle including adequate and healthy sleep and avoiding harmful effects of sedentary lifestyle by reduction in use of electronic media.

Study design

This was a cross-sectional, descriptive study in college going students.

Study duration

This data was collected from participants of AACCI LSE workshops conducted in six different colleges in India during the period 2008 and 2010.

Sample selection and inclusion /exclusion criteria

Convenience sampling method; we collected data from the AACCI LSE workshop participants at six colleges. All participants were included and there were no exclusion criteria. The sample size was small (30-42) in five groups A, B, D, E F as we restricted the number of participants for the workshop to 30-40 only. The data from medical college students sample (C) is 113 as we conducted an LSE orientation program for this sample.

Data collection

During registration to the AACCI workshop, the students were given a lifestyle proforma to fill. Questions related to food habits e.g. breakfast, lunch box, junk food, and meals before TV; time spent on TV, computer, mobile and other gadgets, and time spent in interaction with parents, friends and relatives were recorded. Family history of risk factors and birth weight were asked for. Names were not asked for, to encourage honest answers. This paper focuses on the results of sleep pattern and use of electronic media of the participants.

Project planning and Data collection in all 6 colleges samples A, B, C, D, E and F was personally supervised by the 1st author.

4th Author helped in organizing and data collection of sample C Pune Medical College students.

5th author helped in organizing and data collection of sample F Delhi Nursing College students.

6th author helped in organizing and data collection for samples A, B, C, D, E.

Results

The total sample was 289 college students from six different colleges in India. The data was collected from AACCI LSE workshops conducted between 2008 and 2010. The breakup is as follows.

Adolescent sample (WHO defined age 10 –19 years)

1. A- 32 High socio-economic status (HSE) first-year junior college students from Mumbai (M-17 F-15; Average age 17; range 16-18 years; data 2008)

2. B- 30 Middle socio-economic status (MSE) students from year junior college students from Mumbai (M-13 F-17; Average age 17; range 16-18 years; data 2008)

3. C- 113 students of first-year Medical College from Pune (M-47 F-66; Average age 18 years; range 18-19 years; data 2009)

AYA - Adolescent and Young adult sample (WHO defined age Young adult 20-24 years)

4. D- 32 students from first-year Vocational college in Mumbai 2009 (M-9 F-23; Average age 19; range 18-21 years; data 2008)

5. E- 42 students of first year Post graduate (PG) M. Tech Engineering college in Hyderabad (M-36, F-6; Average age 22 years; range 20-25 years; data 2010)

6. F- 40 final year Nursing College students in New Delhi 2010 (M-0 F-40; Average age 22 years; range 19-24 years; data 2010) (Graph 1 & 2) (Table 1–3).
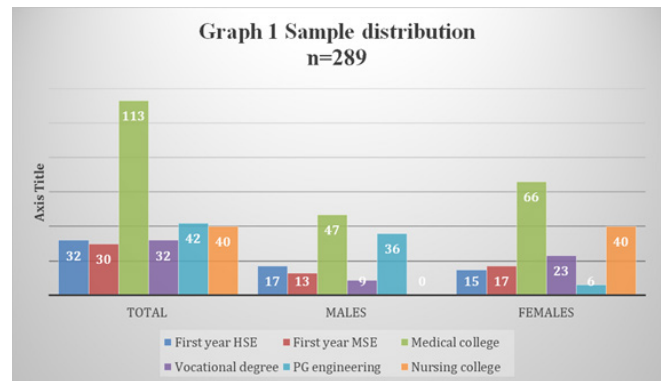
Graph 1 Sample distribution n=289.
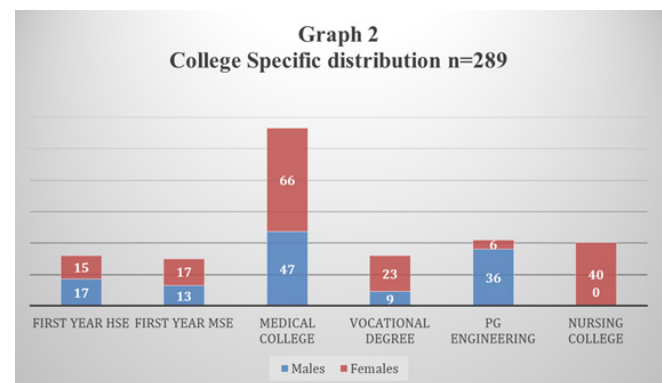
Graph 2 College Specific distribution n=289.

Table 1 Sample distribution n=289

Age	Adolescents 16-19 yrs.			AYAs Adolescents (18-19 yrs.) and Young adults (20-25 yrs.)		
Student background	First-year HSE n=32	First year MSE n=30	First year medical college N=113	Vocational degree n=32	PG engineering n=42	Final nursing college n=40
City	Mumbai	Mumbai	Pune	Mumbai	Hyderabad	New Delhi
Age range in years	16-18	16-18	18-19	18-21	20-25	19-24
Sample group	A	B	C	D	E	F
Total Number %	32 11.07%	30 10.38%	113 39.1%	32 11.07%	42 14.53%	40 13.84%
Male Number %	17 53.12%	13 43.33%	47 41.59%	9 28.12%	36 85.71%	0 0%
Female Number %	15 46.87%	17 56.66%	66 58.40%	23 71.87%	6 14.28%	40 100%

Table 2 Sleep Pattern of College Students n=289

Age	Adolescents 16-19 yrs.						AYAs Adolescents (18-19 yrs.) and Young adults (20-25 yrs.)					
Student background	First-year HSE n=32		First year MSE n=30		First year medical college N=113		Vocational degree n=32		PG engineering n=42		Final nursing college n=40	
City	Mumbai		Mumbai		Pune		Mumbai		Hyderabad		New Delhi	
Age range in years	16-18		16-18		18-19		18-21		20-25		19-24	
Sample group	A		B		C		D		E		F	
Sleep pattern												
	Earliest	Latest	Earliest	Latest	Earliest	Latest	Earliest	Latest	Earliest	Latest	Earliest	Latest
Time to go to sleep pm	10-11	11-12	10-11	11-12	11-12	12-1 am	10-11	11-12	11-12	12-1 am	11-12	12-1 am
Male no/%	1 5.88%	13 75%	8 63%	5 37%	24 51%	10 21.3%	3 33.33%	5 55.55%	22 62%	8 23.81%	No males	No males
Female no/%	1 6.66%	13 85%	0 0%	13 75%	38 57%	15 22.7%	11 47.81%	14 63.07%	4 62%	1 23.81%	41 61%	5 13%

Table 2 Continued...

Age	Adolescents 16-19 yrs.						AYAs Adolescents (18-19 yrs.) and Young adults (20-25 yrs.)					
Student background	First-year HSE n=32		First year MSE n=30		First year medical college N=113		Vocational degree n=32		PG engineering n=42		Final nursing college n=40	
Time of getting up am	5-6	6-7	6-7	8-11	6-7	7-8	6-7	7-8	6-7	8	6-7	8
Male no/%	3 17.64%	13 80%	3 24%	6 50%	38 80%	4 7.8%	5 56%	1 11.11%	22 61%	12 33%	No males	No males
Female no/%	2 13.33%	8 60%	9 53%	8 46%	55 83%	2 3%	17 76%	3 13.03%	4 61%	2 33%	30 76%	4 10%
Total no of sleep hours	6-7	7-9	7-8	8-10	6-8	6-8	8-9	8-9	7-8	7-8	7-8	7-8
Male no/%	6 35.29%	10 58%	4 30%	2 15%	9 20%	30 64%	9 100%	0 0%	11 30%	22 62%	No males	No males
Female no/%	3 20%	9 66%	9 54%	9 55%	15 23%	49 75%	15 65%	4 17.36%	2 30%	4 62%	27 67%	12 30%

We had asked the timing for going to sleep and getting up in the morning, we had many variations so far this table we have taken only the earliest and latest, hence the total has not come to 100% in these columns.

Table 3 Electronic media use by college students of AACCI LSE workshop n=289 (age 16-25 years) n=289

Age	Adolescents 16-19 yrs.						AYAs Adolescents (18-19 yrs.) and Young adults (20-25 yrs.)					
Student background	First-year HSE n=32		First year MSE n=30		First year medical college n=113		Vocational degree n=32		PG engineering n=42		Final nursing college n=40	
City	Mumbai		Mumbai		Pune		Mumbai		Hyderabad		New Delhi	
Age range in years	16-18		16-18		18-19		18-21		20-25		19-24	
Sample group	A		B		C		D		E		F	
Electronic media use												
Response	Never	>6 hrs.	Never	>6 hrs.	Never	>6 hrs.	Never	>6 hrs.	Never	>6 hrs.	Never	>6 hrs.
TV daily %	32.3	1	3.33	6.67	30.1	0	9.37	6.25	35.71	21.43	22.5	20
TV weekends %	27.1	8.95	3.33	3.33	45.1	0	3.12	12.5	9.52	9.52	0	15
Comp daily %	9	0	16.67	6.67	42.5	0	15.62	9.38	0	97.62	75	7.5
Comp weekends %	18.1	8	16.67	3.33	55.8	0	6.25	6.25	14.29	64.29	65	5
Mobile daily %	9.67	35.4	17.39	39.13	0.9	12.4	0	17.39	14.29	19.05	60	19.51
Mobile weekends %	0	25.45	13.04	8.7	0.9	24.8	0	30.43	38.1	16.67	70.73	12.19
Total hours of sleep	6-7		7-10		6-8		8-9		7-8		7-8	

Discussion

Our study aimed to understand the lifestyle patterns of adolescents and young adults from various college settings in India. This paper focuses on understanding their sleep patterns and electronic media use and planning intervention strategies for the same.

Sample distribution (Table 1)

The total sample was 289 college students from 6 different colleges in India.

Group A comprised 32 (11.07%) High socio-economic status first year junior college students from Mumbai (M-17, 53.12% F-15, 46.87%; Average age 17; range 16-18 years).

Group B comprised 30 (10.38%) Middle socio-economic status students from year junior college students from Mumbai (M-13, 43.33% F-17, 56.66% ; Average age 17; range 16-18 years).

Group C comprised 113 (39.10%) students of first-year Medical College from Pune (M-47, 41.59% F-66, 58.40%; Average age 18 years; range 18-19 years).

Group D comprised 32 (11.03%) students from first-year Vocational College in Mumbai 2009 (M-9, 28.12% F-23, 71.87%; Average age 19; range 18-21 years).

Group E comprised 42 (14.53%) students of first year Post graduate (PG) M.Tech Engineering college in Hyderabad (M-36, 85.71%, F-6, 14.28%; Average age 22 years; range 20-25 years).

Group F comprised 40 (13.84%) final year Nursing College students in New Delhi 2010 (M-0, 0% F-40, 100%; Average age 22 years; range 19 -24 years).

Sleep patterns (Table 2)

Interesting findings were seen in sleep patterns of the various groups. The students from the younger age group (16–18 years) in Mumbai sample A and B (N= 62) slept the longest. This could be due to many factors. Since most of them were going to appear for competitive board examinations, parents in India are very involved during this stage to ensure that teens sleep adequately for good academic results. As they are below 18 years, they are more likely to accept parental monitoring. Parental involvement in setting bedtimes wanes, though they become increasingly involved in waking teenagers in the mornings. Curfews and school schedules also affect adolescent sleep patterns, seen most commonly in imposing earlier rise times as the school day begins earlier during the adolescent years.[4]

As expected the group C Medical students had the least hours of sleep i.e. 6 hours. This could be mainly because they have erratic schedules, emergency calls, and night duties which disturb their normal sleep pattern and healthy habits. However, they also engaged

in daytime naps. Research has indicated that mid-day naps improve cognitive functioning of medical residents.[8] Additionally, this profession experiences multiple stressors, hence adopting a healthy lifestyle is very important for them. Making them aware of the importance of a healthy lifestyle that includes good sleep habits will go a long way in preventing Lifestyle diseases in today's youth.

In our study, Group D Vocational students had good amount of sleep hours (8 to 9 hrs.). The were legally adults, many of them were doing part time jobs and were financial independent so had less strict parental monitoring and had very active social life, but then also they manage to do all things and have a good amount of sleep. Other studies have shown Part-time employment has a significant impact on the sleep patterns of teenagers: those who work more than 20 hrs. each week sleep less, go to bed later, are sleepier, and drink more caffeine and alcohol.[4] Kurt e al.[13] also reported that the sleep quality of social studies vocational school students was generally poor; non-formal education, daytime somnolence, irregular diet, nonregular exercise, and short sleep were risk factors for poor sleep quality. In their study, 44.3% of students had good sleep quality. Poor sleep quality was 1.5 times higher among formal education students when compared to non-formal education students.

Group E engineering students had better sleep hours i.e. 7 to 8 hrs. perhaps due to a better schedule given the formal and structured nature of education. They were also more mature in age and more concerned about job prospects.

Time of going to sleep (Table 2)

In all groups, students usually went to sleep at around 11-12 pm. In Group A, 85% of girls and 75% Boys went to sleep at around 11-12 pm. In group B, 75% girls and 37% boys slept at 11-12 pm; additionally, 63% boys slept between 10-11 pm. In group C comprising 1st year medical students, both boys and girls went to sleep between 12-11 pm (Girls-57%, Boys - 51%). In group D, 80% boys slept between 11-12 pm, however, 80% girls slept between 10-11 pm. In group E (PG engineering students), gender differences were not pronounced with most students going to sleep at 11-12 pm (62%). In group F, 61% of nursing students went to sleep at 11-12 pm, and 13% slept at around 1 am.

Time of getting up in the morning (Table 2)

In group A, 60% of the Girls and 80% of the Boys woke up between 6 and 7 am. In group B, 53% Girls and 24% Boys woke up between 6 and 7 am; This group included late risers as well with 46% of girls waking up between 8-9.30 am and 50% of Boys between 8 and 11 am. In group C first year medical students, 83% Girls and 80% Boys woke up between 6 and 7 am. In Group D comprising vocational students, 76% Girls and 56% Boys woke up between 6 and 7 am. In group E comprising engineering students, 61% students woke up between 6 and 7 am and 33% students at around 8 am. In group F, 76% nursing students woke up between 6 and 7 am.

Total hours of sleep (Table 2)

The sleep duration in different groups varied greatly. In group A, 66% Girls and 58% Boys slept for 7-9 hours. In group B, 54% Girls and 30% Boys slept for 7-8 hours; 55% Girls and 15% Boys slept longer from 8-10 hours and 10 hours or more, respectively. Students from group C had erratic habits and lesser sleeping hours ranging from 6-8 hours: 6-8 hours (Girls 75%, Boys 64%), 6-8 hours (20-23% both girls and boys); 10% also took daytime naps of 1-2 hours. Students from Group D had lesser sleep duration, with 65% Girls and 100% Boys sleeping for only 8-9 hours. In group E, 62% students

slept for 7-8 hours, with 30% students sleeping for 7-8 hours. In group F, the nursing students had varied sleep schedules: 7-8 hours (67%), and 7-8 hours (30%).

Electronic media usage

The use of electronic gadgets and TV was not excessive in our sample, given that all these students were pursuing a competitive academic course and the Mumbai students were from the XII std which leaves less time for such activities.

Group E post-graduate engineering students used the computer and internet and also most used it for >6 hours daily, given that WIFI is a necessary part of the curriculum. Research indicated that internet is an inseparable part of engineering educational system and that the dependency on the Internet and its services increases day by day as engineering colleges depend on the Internet for their various educational purposes.[14] During the workshop these students were made aware of the various adverse effects of excess computer use on the mental and physical health and were given tips for healthy computer habits including ergonomics and eye exercises etc. A study by Srinivasaragan et al.[15] indicated that majority of students browsed the Internet daily (33.33%). Like our study, their sample also used Internet facilities like e-mails, Webpages, search engines and chatting facilities for communication academic activities and for sourcing of information and knowledge.

Group F nurses used the computer internet and mobile the least, which could be attributed to their long duty hours in the hospital and no time to spend on mobile while working in the hospital for patient care.

Television watching habits, Computer and Mobile Phone usage (Table 3)

In group A, only 1% students watched Television (TV) daily and 8.95% students watched it on weekends for > 6 hours. In Group B, 6.67% of students watched TV daily and 3.33% students watched it on weekends for >6 hours. In Group C, the medical students did not watch any TV during weekdays or even on weekends. In vocational students from group D, 6.25% of students watched TV daily and 12.50% students watched it on weekends for >6 hours, which is highest among all groups. In group E, 21.43% of students watched TV daily and 9.52% students watched it on weekends for >6 hours. Finally among the group F, nursing students, 20% watched TV daily and 15% watched it on weekends for >6 hours.

Computer usage differed depending on the students' coursework and interests. Group A comprising junior college students, 0% used computers daily and 8% used computers on weekends for >6 hours. Similarly, in group B, 6.67% students used computers daily, and 3.33% used computers on weekends for >6 hours. Group C Medical college students did not use computers on weekdays and weekends (0%). In Group D vocational education students, 9.38% students used computers daily, and 6.25% used computers on weekends for >6 hours. In postgraduate engineering students (group E), 97.62% students used computers daily, and 64.29% used computers on weekends for >6 hours. Research indicated that internet is an inseparable part of engineering educational system and that the dependency on the Internet and its services increases day by day as engineering colleges depend on the Internet for their various educational purposes.[14] In group F comprising nursing students, 7.50% used computers daily and 5% used computers on weekends for >6 hours.

In terms of mobile phone usage, 35.40% students from group A used mobile phones daily and 25.45% used mobile phones on

weekends for >6 hours. Similarly, in group B, 39.13% students used mobile phones daily, and 8.70% used mobile phones on weekends for >6 hours. 12.40% of Medical college students (group C) used mobile phones daily and 24.80% used them on weekends for >6 hours. In group D, vocational education students, 17.39% students used mobile phones daily, and 30.43% used mobile phones on weekends for >6 hours. In postgraduate engineering students (group E), 19.05% students used mobile phones daily, and 16.67% used mobile phones on weekends for >6 hours. In group F comprising nursing students, 19.51% used mobile phones daily and 12.19% used mobile phones on weekends for >6 hours. A large population based study in 2012[11] showed that Adolescents spent a large amount of time during the day and at bedtime using electronic devices. Daytime and bedtime use of electronic devices were both related to sleep measures, with an increased risk of short sleep duration, long sleep onset latency and increased sleep deficiency.

We also reviewed other studies of sleep pattern in college students. A great proportion of college students experience various sleep problems, which damage their health and study performance. College students' sleep problems, which are caused by several factors, have been easily ignored before.[16]

The majority of respondents (62, 1%) reported sleeping time of 5-8 hours per night. To fall asleep at night 13, 1% of participants indicated needing soporific. Overall, only 36, 6% of students showed good sleep behaviors. Among respondents (44, 1%) had moderate chances of dozing and 2, 8% had high chances of dozing, There was no significant statistical relationship between academic performance and bedtime (P-value = 0,231).[17]

Conclusion

This study aimed to understand the sleep habits and electronic media use of adolescents from various college settings and plan intervention strategies for the same. Results show that adolescents and young adults from different educational backgrounds have varied sleep patterns and their digital use also differs based on their personal needs and curriculum. This multicentric data has helped AACCI create standardized modules customized for each of these group and plan intervention programs, making them aware of importance of healthy lifestyle that includes adequate sleep and reduction of electronic media as it is shown to have adverse effects on their mental and physical health.

Psychoeducation of adolescents about healthy sleep and media usage habits is important as it will act as protective factors against high prevalence mental health conditions like depression and NCDS. Non communicable diseases among adolescents and young adults, AACCI regularly conducts workshops to promote healthy lifestyle and importance of healthy sleep, adequate physical activity and healthy diet to prevent NCD. Instead of giving only theory lectures – we have found that sharing the research results with the school, college management, parents and students themselves – creates a far lasting impact as it makes them realize their own unhealthy lifestyle pattern. So our research is also used for implementation of betterment of mental and physical health of adolescent and Young adults.

Acknowledgements

Limitations

The present research has limitations. Although the total sample size is large, the samples from each section are small, thus limiting the generalizability of the findings. Additionally, since the data was very heterogenous and varied sample size we did not do statistical analysis .Given the descriptive nature of the study, external validity cannot be established.

Future research

This pilot study is the basis for future research. Future studies can statistically analyze the data to see if there are significant differences in the sleep patterns and electronic media usage in adolescents. Additionally, the impact of sleep patterns on adolescents' academic performance can also be studied. AACCI will conduct in depth studies in this regard to plan intervention to improve lifestyle of adolescents.

Statistical analysis

The data has not been analyzed statistically, as the sample size at each center was small and their backgrounds different. Descriptive comparisons have been made across students' sleep patterns, electronic usage, and food habits.

Ethical clearance

Ethics approval was obtained from AACCI Institutional ethics committee.

Permission and consents

Prior permissions were taken from the college Principals to conduct the workshop, including parental permission for the participants below 18 years of age. Written assent (16-17 years) consent (>18 years) was obtained from the students by including it in the questionnaire form.

Funding

Conflicts of interest

All authors work as volunteers in a civil society AACCI, which funded this project in the interest of the welfare of students and, have no conflict of interest. There is no personal, organizational or financial conflict of interest with regard to the design, conduct, supervision, reporting, and presentation of results.

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