To Study the Sleep Pattern & Factors Affecting Sleep in the Adolescence

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Abstract :

Background : The frequency of usage of mobile phones and music media increase with age and depends on socio-economic status. While girls use mobile phones and music, boys use computers and games. Children's television viewing habits have been reported to be associated with variety of significant behavioral consequences, including obesity and poor eating habits, decreased physical activity and physical fitness. **Objectives :** The study is to assess the Sleep pattern & Factors affecting sleep in the adolescent. **Methods :** A total of 1210 subjects were assessed from age of 12 - 18 years from urban schools and Medical college of Kalaburagi, to find sleep pattern and factors affecting sleep in adolescents through a questionnaire. **Results :** In the study the adolescents have delay bedtime and wake up time during the holidays, adolescents also use their bed for other than sleep like doing homework, watching television, playing video games, talking in a telephone. **Conclusion :** The present study showed that as the age increases there is delayed in both bedtime and wake up time and had a significant P value.

Keywords : Sleep pattern, adolescents, factors affecting sleep.

Introduction : The frequency of usage of mobile phones and music media increases with age and depends on socio-economic status.[1,2] While girls use mobile phones and music media move frequently than boys, boys use computers, internet and game consoles more frequently.[3] Children's television viewing habits have been reported to be associated with a variety of significant behavioral consequences, including obesity and poor eating habits decreased physical activity and physical fitness.[4, 5]

Insufficient sleep has also been positively related to impaired school performance and day time sleeping and decreased day time alertness level.[6] There is a gradual decline in the average sleep duration from infancy through adolescent. The decline in daytime sleep results in termination of naps typically by around 5years of age. Typical adolescent still requires 9-9.25 hours of sleep per night.[7] Increasing irregularity of sleep wake patterns in typically observed across childhood into adolescence this is characterized by increasingly longer discrepancies between school night and non - school night bedtimes and wake times, and increased weekend over sleep in an attempt to compensate for chronic week day sleep insufficiency.[7]

This practice not only fails to adequately address performance deficits associated with insufficient sleep on school nights, but further exacerbates normal adolescent phase delay and result in additional circadian description.

Objectives:

1. Study is to assess the Sleep pattern in the adolescent
2. Factors affecting sleep in the adolescent

Methods :

Study design : Observational descriptive study.

Sample size(n) : 1210 (as pern=Z2PQ/d2)

Source of Data : The data was collected from urban schools (SRN Mehta school, CPM School, Appa School &CPM Junior college), and Medical college of Kalaburagi, Karnataka over a period of 22months from December 2016 to September 2018.

Collection of Data : Studied the sleep pattern and factors affecting sleep in adolescents between the age group of 12-18years by using a standard questionnaire. Height was

measured with portable Holtain's stadiometer, weight was measured with the digital weighing machine. Neck circumference with the measuring tape. The Proforma was filled by the subjects in front of the researcher. The Socio-Economic status depending on the father's education, occupation and annual income were divided into 5 classes (Modified Kuppuswamy Scale 2016).[8]

Inclusion Criteria : Adolescent of 12-18 years.

Exclusion criteria : Children with recent Hospitalization (<1 month)

Statistical analysis : Data was entered into Microsoft Excel (Windows 7; Version 2007) and analyses were done using the Statistical Package for Social Sciences (SPSS).

Results:

Table 1 : Distribution of Study Subjects According to the Age (N=1210)

Age	No.	Percent (%)
12	5	0.4
13	118	9.8
14	184	15.2
15	158	13.1
16	278	23.0
17	365	30.2
18	100	8.3
19	2	0.2

A total of 1210 subjects were recruited for the study, 5(0.4%) were 12 years, 118 (9.8%) were 13 years, 184 (15.2%) were 14 years,158(13.1%)were 15 years, 278 (23.0%) were 16 years, 365 (30.2%) were 17 years, 100 (8.3%) were 18 years and 2 (0.2%) were 19 years.(Table 1)

Chart 1: Distribution of Study Subjects According to the Gender (N=1210)

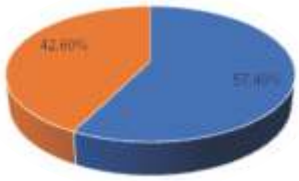

Table 2: Distribution of Study Subjects according to the Socioeconomic (SE) status (N=1210)

SE Status	No.	Percent (%)
Upper middle	717	59.3
Lower middle	493	40.7

Out of 1210 maximum subjects 717 (59.3%) belonged to upper middle class and 493(40.7%) belonged to lower middle class according to modified Kuppuswamy scale. **(Table 2)**

Table 3 : Distribution of Study Subjects according to the response to questions (N=1210)

Question No.	N	O	S	Q	F	A
1	24.0	11.6	37.0	2.2	6.4	18.6
2	42.3	19.2	23.6	4.0	5.0	5.8
3	55.5	12.2	25.1	2.1	2.4	2.7
4	61.2	11.7	23.6	0.4	1.4	1.5
5	26.0	9.4	31.2	5.2	6.9	21.1
6	32.7	9.6	26.6	5.0	6.2	19.7
7	26.9	8.6	25.3	4.0	7.2	27.9
8	10.8	8.8	23.3	4.5	8.8	43.6
9	12.6	8.8	26.1	5.5	8.1	38.8
10	28.3	9.6	24.7	2.5	7.4	27.5
11	48.0	11.0	27.1	2.8	3.7	7.4
12	44.6	11.3	34.1	2.6	2.4	5.0
13	47.8	9.0	22.6	3.4	3.1	14.0
14	74.1	5.7	11.7	1.5	1.0	6.0
15	79.1	5.0	10.3	1.2	1.3	3.1
16	42.6	15.3	21.7	3.6	3.1	13.6
17	49.8	12.5	19.5	2.5	3.2	12.5
18	16.6	8.6	25.3	4.7	9.0	35.8
19	20.7	7.3	24.9	4.0	8.6	34.5
20	51.7	10.5	21.8	3.7	2.7	9.5
21	33.0	7.4	21.2	2.0	2.7	33.7
22	60.3	6.7	15.6	2.3	3.0	12.1
23	71.6	6.2	8.7	1.5	2.1	9.9
24	34.5	6.2	25.0	2.5	6.5	25.0
25	30.7	9.1	26.1	3.9	5.0	25.3
26	56.8	10.2	28.7	0.9	1.2	2.1

Questionnaire : (Table 3)

Q1. After 6:00 pm, I have drinks with caffeine (e.g,. cola, tea, coffee, chocolate.

Q2. During the hour before bedtime, I am very active (e.g., Playing outside, running, wrestling.)

Q3. During the hour before bedtime, I drink>4 glasses of water (or some other liquid.)

Q4. I go to bed feeling hungry.

Q5. During the hour before bedtime, I do things that make me feel very awake (e.g., playing video games, watching TV, talking on the telephone.)

Q6. I go to bed and do things in my bed that keeps me awake (e.g., watching T.V. Reading.)

Q7. I use my bed for things other than sleep (e.g. talking on the telephone, watching TV, playing video games, doing homework.)

Q8. I go to bed and think about things I need to do.

Q9. I go to bed and relay the day's events over and over in my mind.

Q10. I check my clock several times during the night.

Q11. I wake up frequently during my sleep.

Q12. During the I hour before bedtime, things happen that make me feel strong emotions (sadness, anger, excitement, upset.)

Q13. I fall asleep while listening to loud music / watching TV.

Q14. I fall asleep in a brightly lit room (e.g., the overhead light is on.)

Q15. I fall asleep in one place and then move to another place during the night.

Q16. During the school week, I go to sleep late, more than I hour past my usual bedtime.

Q17. During the school week, I wake up late, more than I hour past my usual wake time.

Q18. On holidays, I go to sleep late, more than I hour past my usual bedtime.

Q19. On holidays, I wake up late, more than I hour past my usual wake time.

Q20. During the day, I take a nap that lasts > 1 Hour.

Q21. Presence of co-sleeping (siblings, parents, grandparents.)

Q22. Does co-sleeping disturbs your sleep.

Q23. Presence of snoring.

Q24. I wake up with alarm clock.

Q25. I wake up with a biological clock.

Q26. I wake sleep deprivation (moody, fatigue, anger, irritability, day time lethargy, headache, muscle ache.)

Response to the questions : N - Never, **O -** Once in a while, **S -** Sometimes, **Q -** Quite often, **F -** Frequently, **A -** Always.

Table 4: Association between Age & Question 5-during the hour before bedtime, I do things that make Me Feel very Awake(N=1210)

QUESTION 5						
Age	N	O	S	Q	F	A
12	1	2	1	0	0	1
13	34	16	35	8	14	11
14	59	20	56	5	10	33
15	54	13	49	10	5	27
16	68	24	99	16	18	52
17	84	25	107	17	26	106
18	13	14	30	7	11	25
19	2	0	0	0	0	0
Chi-Square Test, P Value = 0.005, Significant						

In 1210 subjects, the sleep pattern and factors affecting sleep were studied in urban school and medical college of Kalaburagi subjects, and there is association between age and doing things that make awake during the hour before bedtime, 21% of the adolescents do things that make them awake during the hour before bedtime and has a P value of 0.005, which is significant.**(Table 4)**

Table 5: Association between Age & Question 7- I Use My Bed for Things other than Sleep (N = 1210)

QUESTION 7						
Age	N	O	S	Q	F	A
12	2	1	1	0	1	0
13	33	7	41	5	9	23
14	48	21	52	10	11	41
15	47	10	44	5	12	39
16	83	28	55	9	11	92
17	85	32	90	19	36	102
18	57	5	20	0	7	141
19	0	0	2	0	0	0
Chi-Square Test, P Value = 0.117, Not Significant						

In 1210 subjects, the association between age and use of their bed for things other than sleep like using their bed for doing homework, watching television, talking in telephone, playing with video games. The 19.7 % adolescents use of their bed for things other than sleep and has P value of 0.117 which is not significant. **(Table 5)**

Table 6 : Association between Age & Question 17- During School Week I Get Up Late more than 1hour than My Usual Time (N = 1210)

QUESTION 17						
Age	N	O	S	Q	F	A
12	2	1	1	0	0	1
13	61	9	34	3	2	9
14	97	14	47	6	8	12
15	88	19	28	2	3	18
16	157	38	43	5	8	27
17	158	61	58	8	11	69
18	38	9	25	6	7	15
19	2	0	0	0	0	0
Chi-Square Test, P Value <0.001, Significant						

In 1210 subjects, as the age increases the 13.3% adolescent get up late than their usual time during school week and has a significant p value <0.001. **(Table 6)**

Discussion : A descriptive study was conducted on urban school and college on adolescents aged 12-18years fulfilling the inclusion criteria over a period of 18months. Our study highlights the sleep pattern in adolescents and factors affecting sleep in adolescents. In our study, the sleep duration varied with age, as the age increases the sleep duration is less. The age group of 12-14years 585(48.3%) subjects had >9 hours sleep and the age group of15-18 years 625(51.7%) had < 9 hours sleep. A study done by Buxton OM et al (2015),[9] parent-reported child sleep duration varied with age, with younger children (6-11 years) sleeping longer than adolescents (12-17 years). Similarly, intake with caffeine after 6pm have delay in bedtimes in 18.6% adolescents. Adolescents using bed for other than sleep like reading & watching television had a delay in bedtime in 26.6%.

In this study, girls use mobile phones, music more and boys use computers, findings was consistent with the study done by Punamäki RL et al (2012)[3], in which girls use mobile phones and music media more frequently and, boys use computers, the internet and game consoles more frequently.

The 21% adolescents in our study using television, talking on telephone and playing video games during bedtimes, have delay in bedtime and also have decreased sleep duration. A study done by Mari Hysinget al (2015),[10]sleep and use of electronic devices in adolescence, concluded that media use may directly affect sleep by replacing it due to its time consuming nature, or may interfere with sleep through increased psychological arousal, alternatively, the bright light exposure inherit in most electronic media devices may interfere with sleep by delaying circadian rhythm when exposure takes place in evening.

A study was done by Buxton OM et al (2015),[9] reported that sleep duration varied with age. Sufficient sleep quantity and adequate sleep quality were protected by well-established rules of sleep hygiene, such as limiting caffeine intake and maintaining a regular bedtime. In contrast, sleep deficiency was more likely to be present when parents and children did not adhere to sleep hygiene standards.

In our study adolescents have regular sleep during the school week but delay in bedtime(13.6%)during holidays,

and delay in the wake up time (12.6%) during holidays. The 35.8% adolescents with insufficient sleep have a nap during day time. A study by A Storfer-Issenet al (2013),[11] adolescents with poor sleep hygiene had significantly lower school competency score and significantly higher behavioral problem scores, which is also consistent with poor sleep quality/insufficient sleep duration day time sleep was weekly correlated with sleep duration and was not associated with measures of sleep quality. The adolescents with insufficient sleep compensate by napping during day.

Our study observes lower middle class subjects have 35.8% presence of co-sleeping than upper middle class subjects and due to co-sleeping 34.5% adolescents frequently wake up during night.

Conclusion : Study showed that as the age increases the adolescent do things like watching television, talking on the mobile phone, playing video games during the hour before bedtime and have delayed bedtimes. There is increase in the bedtimes after having drinks with caffeine after 6pm. So its necessary to maintain sleep hygiene standards.

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