

A Study on Daytime Sleepiness, Factors affecting Sleep and Effectiveness of Sleep Education Program on Sleep Quality among College Students

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Abstract: *Poor sleep quality and daytime sleepiness are the most prevalent sleep problems globally among college students which contributes to the poor health of an individual as well as it affects academic performance of students. College students can easily adopt lifestyle changes which occur at a high rate and affects the sleep pattern and sleep behavior which contributes to the poor health of an individual. **Methodology:** In this study quantitative research approach was used as research approach in the study. The study was conducted at two different degree colleges of Dehradun. A total of 170 participants were assessed for daytime sleepiness, factors affecting sleep and sleep problem in the first phase. Seventy seven (77) participants had sleep problem as per PSQI and they have been included in the second phase. In experimental group, intervention was given in the form of teaching once followed by relaxation continuously for two weeks. Then sleep quality was assessed on 14th day and 28th day of intervention. Participants in control group were also assessed for Sleep quality and also follow up was done. **Results:** Study result revealed that majority of participants (66.6%) had daytime sleepiness which affects mainly from psychological and lifestyle factors statistically. The mean sleep quality score in experimental group were 6.20, 2.54 and 5.26 at baseline, 14th day and 28th day of intervention respectively whereas, 6.86, 4.64 and 4.73 at baseline, 14th day and 28th day of intervention respectively in control group. **Conclusion:** It was concluded that there was improvement in sleep quality soon after intervention as they practiced relaxation continuously.*

Keywords: Effectiveness, Sleep quality, Sleep education program, Daytime sleepiness

1. Introduction

Sleep plays a very significant role in wellbeing of human being. Many literature shown that there is a linkage of poor sleep with academic performance, neuro-cognitive function, physical and psychological health^[1]. In Uttarakhand, the prevalence of sleep problems among adolescents is 10-11%^[2]. According to Pittsburg sleep quality index (2017), worldwide over 60% of population suffer from poor sleep quality. A study of Gaultney JF on prevalence of sleep disorders in college students showed that twenty-seven percentage of university students are vulnerable to develop minimum one sleep problem throughout their life span and at least a scholars suffers from insomnia and dreams^[3]. Since there is a rapid changes in the technology their lifestyle also changes leading to poor sleep quality. They also sacrifice sleep for their studies, completing assignments and other academic functions, engaged leisure period on computer-generated, societal interacting sites and late night-time partying. However, there is shortage of literature on sleep education program on sleep quality among college students. Study tried to explore the effects of sleep education program on sleep quality.

2. Literature Review

Lakshmi V, Jindal M, and Nanda B(2018) conducted a survey to find association between daytime dozing and use of social media and academic performance among medical students by the means of questionnaire, study revealed that majorly students (77.14%) used social media for 2-5 hours in a day and whatsapp was the most common and daytime

sleepiness was also significantly related to the academic performance of the participants^[4]

A community based survey conducted by Gupta R. et al. among 1920 adolescents at Delhi which revealed that adolescents were suffering from sleep deficit of one hour per day and this progressed with higher grades. The results showed that adolescents with higher standard had taken less sleep that is a student studying in higher class is more sleep deprived than that of student studying in lower class.^[5]

2.1 Problem Statement

“A study on daytime sleepiness, factors affecting sleep and effectiveness of sleep education program on sleep quality among college students in selected colleges of Dehradun”.

2.2 Objectives

- To assess the daytime sleepiness of college students.
- To identify the factors affecting sleep of college students.
- To evaluate the effectiveness of sleep education program on sleep quality among college students in experimental and control group.
- To find correlation between sleep quality and daytime sleepiness among college students.

3. Material and Methodology

Quantitative research approach was used in the study. In the first phase, Descriptive design was used to identify the daytime sleepiness, sleep quality and factors affecting sleep of the college students. Further in the second phase quasi-

experimental (Time series) research design was used to find the effectiveness of sleep education program on sleep quality. Ethical clearance was taken from ethical committee of SRHU, Dehradun. Data was collected by using Epworth sleepiness scale to find daytime sleepiness, self structured questionnaire on factors affecting sleep and Pittsburg sleep quality index (PSQI) for assessing sleep quality. A total of 170 participants were assessed for sleep problem, out of them 77 participants (35 in experimental group and 42 in the control group) had sleep problem as per PSQI. Based on the setting the participants are divided into experimental group and control group. In experimental group, intervention was given in the form of teaching once for 35-40 minutes followed by relaxation for 30 minutes continuously for two weeks. Then sleep quality was assessed on 14th day and 28th day of intervention. Participants in control group were also assessed for Sleep quality and also follow up was done.

4. Analysis and Interpretation

Section-A:

Table 1: Frequency and percentage distribution of sample characteristics (N=170)

S. no.	Demographic variables	Frequency (f)	Percentage (%)
Age			
1	a) 18-19 years	131	77.1
	b) 20-21 years	39	22.9
Gender			
2	a) Male	61	35.9
	b) Female	109	64.1
Year of study			
3	a) First	101	59.4
	b) Second	69	40.6
Type of family			
4	a) Nuclear	93	54.7
	b) Joint	65	38.2
	c) Extended	12	7.1
Total Number of family members			
5	a) 3-7	149	87.6
	b) 8-12	21	12.4
Total Family income per month (in Rs.)			
6	a) 10,000-25,999/-	73	42.9
	b) 26,000-50,000/-	97	57.1
Place of living			
7	a) Rural	7	4.1
	b) Semi urban	146	85.9
	c) Urban area	17	10
Area of residence			
8	a) Hostel	33	19.4
	b) Home	97	57.1
	c) Rented outside campus	40	23.5
Regular Exercise			
9	a) Yes	48	28.2
	b) No	122	71.8
Day time nap			
10	a) Yes	90	52.9
	b) No	80	47.1
If yes, then how long (N=90)			
10.1	a) <30 minutes	21	23.3
	b) 30 min-1 hour	45	50
	c) >1-2 hour	19	21.1
	d) >2 hour	5	5.6
11	Coffee or tea consumption		

	a) Nil	1	0.6
	b) 1-3 times	164	96.5
	c) 4-6 times	5	2.9
12	Menstrual problems (N=109)		
	a) Yes	32	18.8
	b) No	77	45.2

Table No. 1 depicts that majority of the participants (77.1%) were belongs to the age group of 18-19 years, majority of them (64.1%) were female, more than half (59.4%) of them were studied in B.com 1st year, more than half of them (54.7%) were belong to the nuclear family, one third of the participants (85.9%) were living in semi urban, more than half (57.1%) of the students were residing in their home, more than half (52.9%) of them were taking daytime nap, majority of the them (96.5%) were taking coffee or tea 1-3 times, majority of the students (87.6%) were having total 3-7 family members, more than half (57.1%) of the participants were belongs to the monthly income (27,000-50,000).

Section B: Assessment of the daytime sleepiness

Table 2 Assessment of the daytime sleepiness of college students based on Epworth sleepiness score (N=170)

S.no.	Situation	Score according to chances of dozing (0-3)			
		0 (would never doze)	1 (slight chances of dozing)	2 (moderate chance of dozing)	3 (high chances of dozing)
1.	Sitting and reading	32 (18.8%)	58 (34.1%)	44 (25.9%)	36 (21.2%)
2.	Watching television	61 (35.9%)	67 (39.4%)	36 (21.2%)	6 (3.5%)
3.	Sitting inactive in a public place	92 (54.1%)	52 (30.6%)	22 (12.9%)	4 (2.4%)
4.	As a passenger in a car /vehicle for an hour without a break	30 (17.6%)	65 (38.2%)	50 (29.4%)	25 (14.7%)
5.	Lying down to rest in the afternoon when circumstances permit	24 (14.1%)	38 (22.4%)	55 (32.4%)	53 (31.2%)
6.	Sitting and talking to someone	100 (58.8%)	41 (24.1%)	23 (13.5%)	6 (3.5%)
7.	Sitting quietly after a lunch without alcohol	129 (75.9%)	21 (12.4%)	15 (8.8%)	5 (2.9%)
8.	In a car/vehicle while stopped for a few minutes in Traffic	71 (41.8%)	51 (30.0%)	32 (18.8%)	16 (9.4%)

Table No. 2 depicts that majority of college students (60.6%) had daytime sleepiness, students were highly doze while sitting and reading i.e.,(21.2%),As a passenger in a car/vehicle for an hour without a break i.e., (14.7%)lying down to rest in the afternoon when circumstances permit i.e., (31.2%) and in a car/vehicle while stopped for a few minutes in traffic i.e., (9.4%).

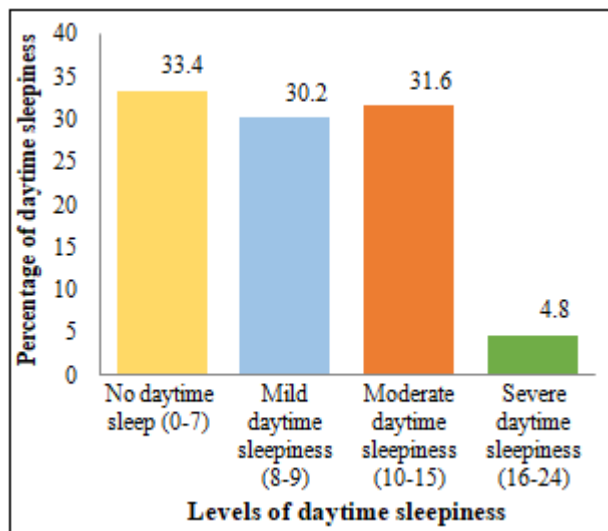


Figure No. 3 shows that 66.6 % participants were having daytime sleepiness in which 28.2% were having mild daytime sleepiness, 27.6% moderate daytime sleepiness and 4.7% were having severe daytime sleepiness.

Section C: Assessment of the factors affecting sleep

Table 3: Frequency and percentage distribution of factors affecting sleep among participants (N=170)

Sr. no	Statements	None f (%)	Rarely f (%)	Frequently f (%)	Always f (%)
Biological Factors					
1.	I find trouble in sleeping during night.	77 (45.3)	91 (53.5)	2 (1.2)	00
2.	I wake up early in the morning and I can't fall back to sleep	100 (58.8)	54 (31.8)	7 (4.1)	9 (5.3)
3.	I could not able to sleep because of my illness	108 (63.5)	49 (28.8)	7 (4.1)	6 (3.5)
Psychological Factors					
4.	I Feel academic pressures influences my sleep	80 (47.1)	69 (40.6)	15(8.8)	6 (3.5)
5.	I could not able to sleep due to family issue.	112 (65.9)	46 (27.1)	11(6.5)	1 (.6)
6.	I could not able to sleep when I think about my parental expectation	77 (45.3)	66 (38.8)	22(12.9)	5 (2.9)
7.	I go to bed early but engaged in thinking something else	61 (35.9)	6 (35.9)	24(14.1)	24 (14.1)
8.	I engaged in playing videogames/ talk/ chat on phone before bed.	33 (19.4)	53 (31.2)	30(17.6)	54 (31.8)
Lifestyle and habit Factors					
9.	I eat/ watch TV on my bed itself	50 (29.4)	41 (24.1)	35 (20.6)	44 (25.9)
10.	I drink coffee/ tea before bedtime	117 (68.8)	37 (21.8)	12 (7.1)	4 (2.4)
11.	I go for late night parties with my friends.	122 (71.8)	39 (22.9)	5 (2.9)	4(2.4)
12.	I do exercise /meditation prior to bedtime to induce sleep	141 (82.9)	20 (11.8)	5 (2.9)	4 (2.4)
13.	I go to sleep at different times in night.	57 (33.5)	61 (35.9)	26 (15.3)	26 (15.3)
14.	I get up from bed at different times in the morning.	46 (27.1)	65 (38.2)	35(20.6)	24 (14.1)

15.	My parents expectation are so high so I need to read at night	68 (40.0)	71 (41.8)	23 (13.5)	8 (4.7)
Parental and Peer pressure Factors					
16.	My parents are particular on wake up time.	56 (32.9)	61 (35.9)	26 (15.3)	27 (15.9)
17.	My parents are particular on sleep time.	58 (34.1)	56 (32.9)	29 (17.1)	27 (15.9)
18.	I get involved in late night family ritual because of parental demands.	91 (53.5)	46 (27.1)	18 (10.6)	15 (8.8)
19.	I happened to reply as my friends expectation.	99 (58.2)	48 (28.2)	13 (7.6)	10 (5.9)
20.	I prefer to sleep in dark	45 (26.5)	30 (17.6)	20 (11.8)	75 (44.1)
Environment factors					
21.	I could not able to sleep due to environmental and room change	62 (36.5)	47 (27.6)	25 (14.7)	36 (21.2)
22.	My environmental creates noise which disturb my sleep	65 (38.2)	42 (25.7)	31 (18.2)	32 (18.8)

Table No. 3 depicts that maximum students (137 out of 170) were engaged in playing videogames/talk/chat on phone, among these 31.8 % engaged always. majority (109) of the participants go to bed early but engaged in thinking something else and they don't sleep and also 58 participants were involved in late night family ritual because of parental demands. majority of the participants (124 out of 170) get up from bed at different times in the morning.

Section-D: Effectiveness of sleep education program on sleep quality

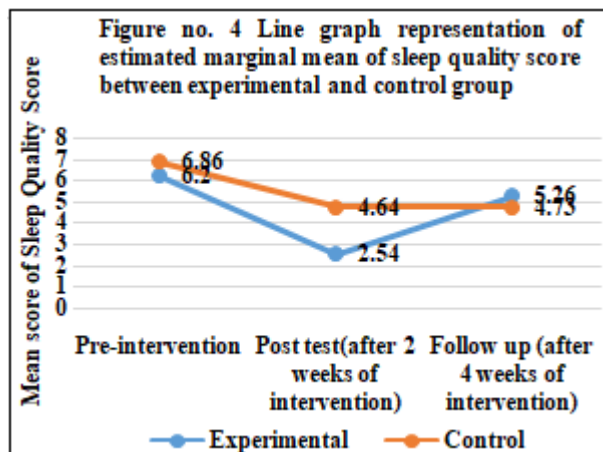
Table 5: Comparison of sleep quality between experimental and control group. (N=77)

Group	Sleep quality			F value	(p value)
	Pre-intervention M ±SD	Post intervention M±SD (After 2 weeks)	Follow up M±SD (After 4 weeks)		
Experimental Group	6.20± 1.58	2.54±1.12	5.26±1.57	81.8	.001**
Control Group	6.86±1.31	4.64±2.14	4.73±1.38	27.0	.001**

The data presented in Table No. 5 showed comparison of mean and standard deviation score between the group in experimental group and control group. For comparison between the group was calculated using repeated measure ANOVA and obtained 'F' value was 81.8 in experimental group whereas in control group 'F' value was 27.0 at the level of 0.001 in both the groups, which showed that experimental group difference seen in post intervention than control group.

The mean of sleep quality in the college students receiving sleep education program was gradually decreased. The mean ± SD of sleep quality from pre-intervention was 6.20±1.58 in experimental group whereas 6.86±1.31 in control group. After two weeks of intervention the mean ± SD was 2.54±1.12 in experimental group whereas 4.64±2.14 in

control group, and 'p' value which was statistically significant at <0.05 level.



Section E: Correlation between sleep quality and daytime sleepiness among college students.

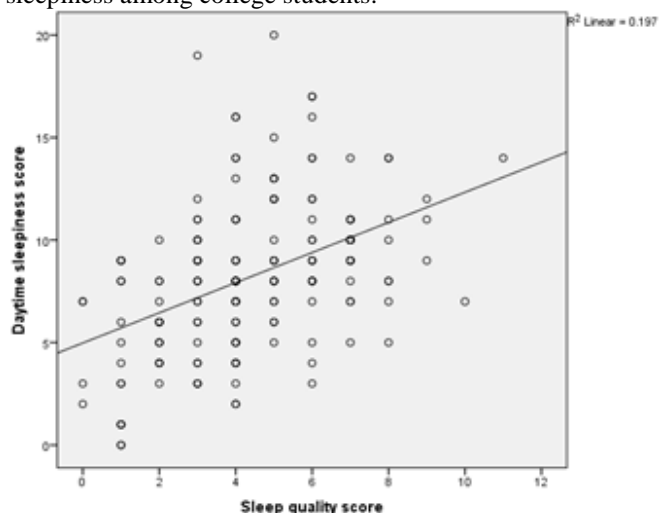


Figure No. 3 shows that there is a weak positive correlation between sleep quality and daytime sleepiness

5. Discussion

The present study findings showed that 66.6% of college students found daytime sleepiness, among those 4.8 % are found severe. This finding was supported by **Akdeniz G et.al., (2018)** on prevalence of the daytime sleepiness among medical students and the result revealed that 70.5% of students were found with daytime sleepiness.^[6] It was also found in the present study that lifestyle factors and psychological factors mainly affects sleep of college students. This finding was similar to **Campsen NA and Bulbotz WC (2017)** which revealed that life style factors which includes alcohol consumption, caffeine consumption, psycho-stimulant use, dietary habits, class schedule and physical activity affects sleep^[7]. Another study by **Insana, Nursan C and Cemile B (2012)** on the contributing factors to poor sleep experiences in according to the university students, findings revealed that psychological problems (67.2%), stress (64.8%), exposure to tobacco smoke in the sleeping room (63.7%), having family problems (62.5%), anxiety and tension (51.1%) also affects sleep.^[8]

The mean \pm SD of sleep quality of college students was 6.20 ± 1.58 , 2.54 ± 1.12 , 5.26 ± 1.57 in experimental group at baseline, on 14th day 28th day whereas in control group it was 6.86 ± 1.31 , 4.64 ± 2.14 and 4.73 ± 1.38 respectively. The 'F' value was 81.8 in experimental group and 27.0 in control group. There was decrease in the mean sleep quality score in experimental group soon after the intervention (2 weeks) and later after (4 weeks) the mean score increased slightly as compared to two weeks. These may be due to practicing at home in different manner can contribute to this reason. The finding was similar to the study conducted by **Hershner S, LM O'Brien (2018)** revealed that there was improvement in mean sleep quality (odd ratio=5.8 versus 6.6, $p < .001$)^[9].

Further analysis, weak correlation was found between sleep quality and daytime sleepiness among college students. The present study finding was similar to the study done by **Hangouche AJ et al, (2018)**. Result showed that there was a positive correlation ($r=0.2$) with the impoverished sleep quality and excessive daytime sleepiness.^[10]

6. Conclusion

The study concluded that college students were found sleep problems and the most contributing factors were life style and psychological factors. Sleep education program helps to improve the sleep quality of college students and it was also observed that there was gradually decrease in sleep quality as the time goes on. So frequent interaction or reminder is necessary for them to practice daily for the healthy life.

7. Acknowledgement

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