



ASSOCIATION AMONG LACK OF SLEEP AND DIETARY BEHAVIOURS IN GIRLS (19- 22YEARS).

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Abstract:

Introduction: Sleep is a biological process that is essential for life and optimal health. College life can contribute to a health or disease promoting lifestyle and ultimately relate to their quality of life. Major changes in lifestyle such as unbalanced diets and lack of sleep can be detrimental to the student's well-being.

Purpose: The purpose of the present study was to provide insight into the effect of lack of sleep and dietary behavior in girls (19-22 years).

Method: A cross sectional study was conducted in Dr. BMN College of home science. Total 100 students were enrolled in this study. The tools used to collect data were questionnaire and 24- hr dietary recall. The sleep quality was analyzed using Pittsburgh Sleep Quality Index (PSQI). Data collected were coded in Microsoft excel and statistical analysis was done using SPSS to interpret the result.

Results: The majority of the students participated in the study have poor quality of sleep (73%) and were short sleepers i.e. sleep less than 6 hr/ night (67%) based on PSQI score. Highly significant correlation was seen between sleep quality and skipping breakfast ($p < 0.05$), The mean calorie and protein intake of students who participated in the study was 1224.7 kcal/d and 34.6 gm/d.

Conclusion: In conclusion, Poor sleep quality leads to skipping breakfast on regular basis. There was no significant relation found between macronutrient intake and sleep quality.

Keywords: BMI, Short sleepers, Sleep quality, PSQI

I. INTRODUCTION

Sleep plays a critical role in brain function and systemic physiology, including metabolism, appetite regulation, and the functioning of immune, hormonal, and cardiovascular systems. Normal healthy sleep is characterized by sufficient duration, good quality, appropriate timing and regularity, and the absence of sleep disturbances and disorders. On an average, adults need 7-9 hours of sleep each night whereas teenagers and infants need 9.5 hours and 16 hours per day respectively (1). In young adults beginning college are entering a world of new experiences and choices. College is a time marked by change, when students experience autonomy and freedom from direct supervision for the first time, greater academic and social pressure, and erratic schedules. Their college life can contribute to a health or disease promoting lifestyle and ultimately relate to their quality of life. Major changes in lifestyle such as unbalanced diets and lack of sleep can be detrimental to the student's well-being. Average sleep duration among adults has decreased during the past 20 years along

with a concomitant increase in the prevalence of obesity. Currently, the evidence suggests a bidirectional relationship between sleep quality and duration and diet. These sleep components and their interactions with diet subsequently affect the risk of developing chronic disease. There is potential link between sleep, dietary intake and nutrition. Sleep status and nutrient intakes are interdependent, since poor sleep may cause reduced food intake, and nutrient deficiency. Studies have shown that short sleepers have higher energy intakes, notably from fat and snacks than do normal sleepers (15). Also, many studies showed that there was a greater snack intake during periods of sleep restriction relative to habitual sleep in normal sleepers (16). When compared with longer sleep duration, adults who report habitual short sleep duration have somewhat higher physical activity energy expenditure but considerably higher energy intake. Young adults who reported inadequate versus recommended amounts of sleep would consume more caffeinated and sugar-sweetened beverages and report more frequent breakfast skipping and eating at fast-food restaurants. Eating behavior after sleep deprivation was examined in two recent studies. Brondel et al. in 2008 described increased caloric intake and hunger after 4 h of night sleep in 12 normal weight young adults. Similarly, preliminary data in 10 healthy young adults by Tasali et al. in 2010 reported a 14% increase in caloric intake, particularly from carbohydrate after four nights of 4.5 h in bed, compared with 8.5 h. A few studies support a connection between bedtime and obesity suggesting that later bedtimes allows for opportunities to consume more calories while also decreasing access to healthier food option.

Thus the purpose of the present study was to provide insight into the effect of lack of sleep and dietary behavior in girls (19-22 years). Hence whether the sleep quality and sleep duration affect the dietary behaviors was the main area of research

II. RESEARCH METHODOLOGY:

The present study has been carried out to assess association among lack of sleep and dietary behavior in girls (19-22 years). The research proposal was approved and passed by the Institutional ethical Committee (IEC) to continue further research.

A cross sectional study was conducted in Dr. BMN college of Home science Matunga east which included 100 girl students. Random, purposive sampling technique was used.

The tools used to collect data were questionnaire and 24- hr dietary recall. The sleep quality was analyzed using Pittsburgh Sleep Quality Index (PSQI).

24- hour dietary recall of the participants was recorded. Nutrient intake was calculated based on the nutritive value of Indian foods given by the IFCT (2019).

Sleep Quality

The Pittsburgh Sleep Quality Index (PSQI) was used to assess the sleep quality of participants during the past month. The PSQI score < 5 was defined as good sleep quality, and the PSQI score ≥ 5 was defined as poor sleep quality (11).

III. STATISTICAL ANALYSIS

Data collected were coded in Microsoft excel and statistical analysis was done using SPSS to interpret the result. Descriptive statistics were used to determine means and standard deviation. The frequency distribution was tabulated for various parameters and was compared using cross tabulation and chi- square test. Pearson's chi- square correlation was used to find correlation between sleep and dietary behaviors. $p < 0.005$ was considered to be statistically significant.

IV. RESULTS AND DISCUSSION

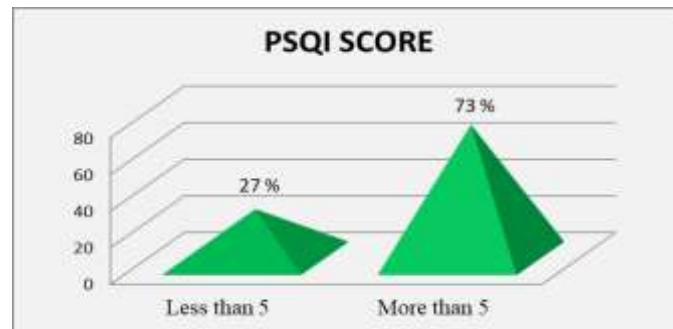
Data on 100 participants who were observed to study the effects with the mean age of 20.35 ± 0.927 has been presented in the current study.

Table 1. Anthropometric Measurements of the Study Participants

	N	Mean	Std. Deviation
Height (cm)	100	156.4	6.57
Weight (kg)	100	56.9	9.89
BMI (kg/m ²)	100	23.04	3.24

From the above table it was observed that the mean height and weight of the student participated in the study was 156.4 cm (SD= 6.57) cm and 56.9 kg (SD=9.89). The mean BMI was 23.04 kg/m² (SD= 3.24) which is high according to Asian BMI classification and reveals that the students belonging to this group of BMI were overweight.

FIGURE NO – 1 QUALITY OF SLEEP



From the above figure it was observed that 73 % of the students scored more than 5 which means they have poor quality of sleep, and only 27% scored less than 5 means they have good quality sleep.

TABLE NO-2 FREQUENCY DISTRIBUTIONS OF SLEEP QUALITY AND SLEEP DISTURBANCE SCORES AS MEASURED BY COMPONENTS AND INDIVIDUAL QUESTIONS OF THE PSQI

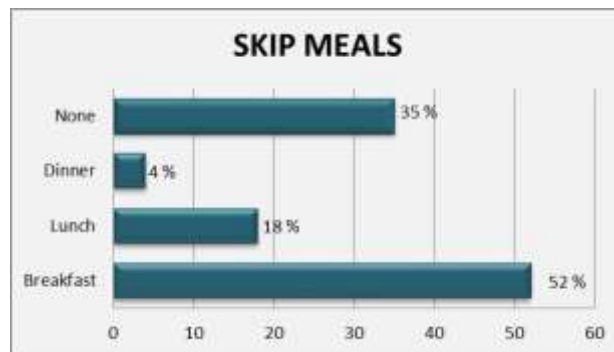
Component	Questions/Components Scores	0	2	3
1.	Rate overall quality of sleep	Very good 11.4%	Fairly bad 27.6%	Very bad 3.1%
2.	How long does it take you to fall sleep	<=15 min 24.4%	31- 60 min 25.0%	>60 min 14.6%
3.	Hours do you actually sleep	>= 7 hrs 33%	5 hrs 42%	<5 hrs 13%
4.	% Time in bed sleeping	>85% 67.0%	65- 74% 7.7%	< 65% 4.6%
5.	Overall sleep disturbances score	0 6.8%	10-18 15.1%	19-27 % 1.0%
6	Daytime dysfunction	0 18.3%	3-4 23.7%	5-6 3.2%

Individual Questionnaire:

Q.5 How often have you had trouble sleeping because	Not in past month	< once a week	1-2times a week	>3 times a week
Q5b. Wake up middle of night/ early AM	19.1 %	25.8%	25.8%	29.2%
Q5c. Wake up to use the bathroom	36.4%	29.2%	14.8%	19.5%
Q5d. Cannot breathe comfortably	77.8%	13.0%	5.5%	3.7%
Q5e. Cough or snore loudly	80.4%	11.4%	4.7%	3.4%
Q5f. Feel too cold	50.4%	23.0%	18.3%	8.3%
Q5g. Feel too hot	46.6%	24.6%	19.3%	9.3%
Q5h. Have bad dreams	43.1%	28.7%	20.7%	7.5%
Q5i. Have pain	64.1%	17.8%	10.7%	7.5%
Q5j. Other reasons	68.7%	9.1%	10.2%	12.0%
Q8. Had trouble staying awake during social activities?	63.4%	22.8%	10.5%	3.2%
Q9. Problem getting enthusiasm	20.1%	47.2%	23.4%	9.3%

Results of the PSQI are presented in Table 3. The mean global PSQI score was 7.8, with 73% of the participants experiencing poor sleep quality (> 5). However, when asked to subjectively rate their quality of sleep, only 30.7% rated it as fairly bad or very bad. The most important components contributing to poor sleep quality included: restricted sleep time, long sleep latency, poor sleep efficiency, and daytime dysfunction. Overall, most students reported restricted sleep; 67% reported six hours or less per night (mean 6.8, SD=1.39). Perhaps as a consequence of the poor quality of sleep, 27.9% of the students reported daytime dysfunction at least once a week. Most participants reported some sleep disturbances (93.0%), and 16.1% were classified as experiencing high levels of sleep disturbances according to the PSQI score.

FIGURE NO –2 SKIP MEALS



The figure no 2 gives detail about the students skipping their meals on a regular basis. 18 % comprised of the students who skipped their lunch, 52% comprised of the students who skipped their breakfast and 35 % comprised of the students who had all 3 major meals i.e breakfast, lunch and dinner.

Table No- 3 Correlation between Sleep Quality and Eating behaviors

	Value	df	p- value
Skip meals	23.01	1	0.004
Energy	89.01	NA	0.07
Carbohydrate	56.8	NA	0.9
Fat	67.9	NA	0.5

From the above table it was observed that skipping meals was showed significant relationship with sleep quality. The prevalence of skipping breakfast was significantly higher among adults who reported poor sleep quality.

There was no significant correlation observed between sleep quality and macronutrient intake ($p > 0.05$).

V. DISCUSSION

The present study highlights the dietary behavior and BMI of the young girls (19- 22 years) with respect to their sleeping pattern. The samples were taken from Dr.BMN College of home science through purposive random sampling method. The total 100 students participated in the study. Students were called in group of 40 and objectives of the study were explained before collecting the data. A brief introduction of what questionnaire intends to collect was given to the participants.

In this cross sectional study on the young adults of Mumbai city, we found that poor sleep quality was strongly associated with poor dietary habits especially meal skipping. In addition, our data suggest that both sleep quality and quantity affects dietary behavior. Sleep health is regarded as a key component in the regulation of ingestive behavior. Food intake or omission at the wrong biological time (i.e., during typical wake-sleep times for most individuals) leads to peripheral circadian clock-driven changes in metabolism related to sleep-wake disturbances and circadian misalignment (13).

It has been speculated that breakfast is an optimal eating occasion to establish ingestive behavior throughout the day, which, downstream, may affect sleep-wake cycles and overall sleep health. In our study we found that sleep quality affects breakfast consumption as the sleep quality decreases breakfast skipping increases and vice- versa.

Studies have showed that during sleep loss, participants ate smaller breakfasts but ate more over the day, especially carbohydrates, proteins, and fiber at night after dinner. Changes in circadian phase and the circadian timing of awakening may have contributed to the altered eating patterns during insufficient sleep (13,14).

Our data suggests that sleep quality significantly affects the breakfast consumption, but there was no significant association found between sleep quality and macronutrient intake.

VI. CONCLUSION

In conclusion, sleep quality significantly affects the dietary behaviours of the girls aged 19-22 years. Poor sleep quality leads to skipping breakfast on regular basis. There was no significant relation found between macronutrient intake and sleep quality.

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