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Original Article

Quality of Sleep and its Impact on the Academic Performance of Undergraduate Medical Students

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ABSTRACT

Introduction: Good quality sleep and adequate amount of sleep are important in order to have better cognitive performance, academic performance and avoid health problems and psychiatric disorders. Sleep disturbance is a distressing and disabling condition that affects many people, and can affect on quality of work and education of students. Thus the aim of the study to assess the factors that contributes to the quality of sleep and its impact on academic performance.

Materials and methods: This cross-sectional study was conducted among undergraduate medical students of KIST Medical College and Teaching Hospital from May to June 2024 after taking ethical clearance from KIST Medical College and Teaching Hospital- Institutional Review Committee before collecting data from participants. Subjects were recruited by Non-Probability sampling technique from students of first, second, third and fourth years and were asked to fill the self-reported questionnaires, using Pittsburgh Sleep Quality Index. Descriptive statistical analysis was done using Statistical Software for Social Sciences version 16.

Results: Out of 280 medical students, 83(29.6%) have poor sleep quality with prevalence among male and female students as 44 (53.01%) and 39(46.99%) respectively. Age, year of study and exam result was found to be statistically significant with p value less than 0.05.

Conclusions: This poor sleep quality is directly and indirectly affecting physical and social health as well as the academic performance of the students. Awareness programs concerning the effect of distorted sleep cycle are suggested to be conducted.

Keywords: Medical students; Pittsburgh Sleep Quality Index; Quality Sleep; Sleep Disturbance

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INTRODUCTION

Sleep is a natural repetitive state of rest for the mind and body which is crucial to life.[1] Disturbance in sleep is a distressing and disabling condition that affects many people, and can affect on quality of work and education of students.[2] Poor quality and reduced duration of sleep undermine physical and mental wellbeing as well as the daily functionality and productivity.[3] WHO report showed that about 27% of people suffer from sleep problems worldwide.[4] The studies also showed that 50 to 70 million people are chronically suffering from sleep disorders. [5]

Medical students represent one subpopulation that seems to be particularly affected by this problem. Medical students have a more stressful academic program related to large academic workload, extended hours of studying, frequent examinations and vast curriculum.[6] Poor sleep quality prevalence is two-fold high among medical students as compared to general population.[7] Inadequate sleep duration and poor quality of sleep among medical students is associated with poor concentration, impaired behavior and lower academic performance.[8]This is the result of poor sleep quality which can be due to various factors like excessive academic burden, crammed schedules, prolonged study sessions, examination stress, peer pressure, high parental expectations and extremely competitive environment.[9]

A review study conducted in US and Brazil showed that 50.9% and 51.5% of medical students had poor sleep quality respectively. [10,11] Similar studies conducted in developing countries showed that 32.5–76% of medical students suffer from poor sleep quality.[12]

A global review revealed that sleep disturbances affect an important proportion of medical students ranging from 41% of the participating students in Iran, 70% in Hong Kong, to 90% in China.[13]

In order to improve outcome of medical education, identification of factors related to poor sleep quality for medical students is important for both educators and students. Hyper-activation of autonomic nervous system, stressful events can be the aggravating factors of poor sleep.[14]

Since sleep plays a significant role in the cognitive processes as well as physical and mental health, [15,16] sleep deprivation can affect the academic performance of medical students.[17] Information on the size and factors associated with poor sleep quality will inform the public and support students towards adopting healthy sleep practice. In Nepal, medical students have poorer attitude of sleep hygiene.[16]

This study is aimed at assessing the factors that contribute to the quality of sleep and its impact on academic performance. The findings of this review will make the medical educators and planners aware to take necessary steps for the improvement of medical student's quality of life.

MATERIALS AND METHODS

A cross-sectional study was done among undergraduate medical students of KIST Medical College and Teaching Hospital from May to June 2024. Ethical clearance was obtained from KISTMCTH-IRC (Institutional Review Committee) before collecting data from participants. List of all medical students was obtained from the college administration. Total enumeration of the study population at the time of data collection was done to collect the data. Participants with chronic illness or drug intake known to influence sleep and who are absent at the time of data collection were excluded. The data was analyzed among 280 students.

Weight was measured on a digital weighing machine. The scale was calibrated to zero before every reading. To measure height, the subject was made to stand vertically against a hard surface, with the head positioned so that the top margin of the external auditory canal was in continuation with the lower margin of the orbit. Hardboard was held vertical to the wall, just over the head Height was marked on the wall and measured with a measuring tape. A BMI of 25 or more is classified as obese, and a BMI below 25 is classified as non-obese.

All the respondents were informed about the aim and objectives of the study and informed consent was taken prior to study and they were aware that their participation was voluntary. Confidentiality of participants were ensured. Students were asked to fill up self-reporting questionnaire using Pittsburgh Sleep Quality Index (PSQI). Statistical analysis was done using Statistical Software for Social Sciences (SPSS) version 16.

RESULTS

The prevalence of poor sleep quality among medical students was found to be 83 (29.6%) with global PSQI score of 5 or more than that.

Socio-demographic characteristics of the study participants

A total of 280 responses were included in the study.

Out of the total study participants in the study, 161 (57.5%) were males. As for the age of respondents, 185(66.1%) were 20 and above. Regarding the studying year, 97 (34.6%) were first year, 34 (12.1%) were second year, 71(25.4%) were third year and 78(27.9%) were fourth year. (Table 1).

Table 1: Socio-demographic Profile: (n=280)

Variable	Categories	Frequency	Percentage
Age	Less than 20	95	33.9%
	20 and above	185	66.1%
Sex	Male	161	57.5%
	Female	119	42.5%
Religion	Hindu	270	96.5
	Islam	5	1.8
	Christian	1	0.4
	Buddhist	4	1.4

Variable	Categories	Frequency	Percentage
Studying year	First-year	97	34.6
	Second year	34	12.1
	Third year	71	25.4
	Fourth-year	78	27.9

Sleep Quality among undergraduate medical students

Out of 280 medical students, 83 (29.6%) were having poor sleep quality. Age, year of study and exam result was found to be statistically significant with p value < 0.05. (Table 2)

Table 2: Association between different variables and quality of sleep

Variables	Categories	Sleep Quality		Total	Chi-square	P value
		Good	Poor			
Age	< 20	57(60%)	38(40%)	95(100%)	7.395	0.007
	>20	140(75.67%)	45(24.33%)	185(100%)		
Sex	Male	117(72.67%)	44(27.33%)	161(100%)	0.972	0.324
	Female	80(67.23%)	39(32.77%)	119(100%)		
BMI	Obese	48(64.86%)	26(35.14%)	74(100%)	1.629	0.202
	Non obese	149(72.33%)	57(27.67%)	206(100%)		
Year of Study	1st	54(55.67%)	43(44.43%)	97(100%)	15.802	0.001
	2nd	26(76.47%)	8(23.53%)	34(100%)		
	3rd	54(76.06%)	17(23.94%)	71(100%)		
	4th	63(80.77%)	15(19.23%)	78(100%)		
Academic Performance	Pass	170(77.63%)	49(22.37%)	219(100%)	25.464	<0.01
	Fail	27(44.26%)	34(55.74%)	61(100%)		

The prevalence of poor sleep quality was highest in 1st year students (44.43%) and least in 4th year students (19.23%). Sleep duration was analyzed and tabulated in table 3. Nearly 51% of students had sleep of less than 6 hours a day.

Table 3: Sleep Duration among study population

No. of hours	No. of students
>7 hours	38(13.6%)
6-7 hours	97(34.6%)
5-6 hours	102(36.4%)
<5 hours	43 (15.4%)

DISCUSSION

Prevalence of poor sleep quality among students in our study is found to be 29.6%. A previous study done among the Nepalese Medical students of Tertiary care hospital showed the prevalence of poor sleep quality of 44%.[18] Previous studies from Pakistan on medical students in 2013 and Nepal on Undergraduate students in 2015 showed 39.5% and 35.4% poor quality sleepers respectively.[19,20] This shows the prevalence of poor quality sleepers are high in case of our study which may be because of increased academic load, hectic schedule or may be due to increased screen time during internet surfing over these years.

Similarly, the previous study on Nepalese medical students revealed more prevalent female poor sleepers (48.2%) than male (39.8%) which was in line with the result of our study.[19]

Sleep quality was poorer among students of basic science (first and second year) in comparison to clinical science (third year and fourth year) may be due to anxiety and fear of increased academic load in new comers is similar to the study done by Camila de Castro Correa et al on sleep quality across different phases of the Medical course.[21] Academic performance was found to be statistically significant with p value < 0.05 which is similar to previous study done in medical students in Pakistan.[22]

Since, our study was conducted on a single institution the result of this study might not be extrapolated to all the medical colleges of Nepal. Despite this the result of our study will provide a reference for further researches in this particular field.

CONCLUSIONS

As per the findings of our research one out of two medical students have poor sleep quality with a greater prevalence in female as compared to male. This poor sleep quality is directly and indirectly affecting physical and social health as well as the academic performance of the students. Awareness programs concerning the effect of distorted sleep cycle are suggested to be conducted.

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