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IMPACT OF SLEEPING PATTERNS ON THE ACADEMIC PERFORMANCE OF MEDICAL STUDENTS.

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Abstract:

Objective: *Sleep disturbance is a common problem faced by medical students affecting their physical and mental wellbeing. Lack of sleep during examinations puts a negative impact on their scores. The objective of this study is to determine students' sleep pattern during night preceding examination and its correlation with their academic performance.*

Methods: *This cross-sectional study was conducted from November to December 2013 among 4th and Final year MBBS students of Quaid-e-Azam Medical College, Bahawalpur, who were appearing in their annual examinations. Using non probability convenient sampling approach, 280 students were selected. Each of the 280 participants was allowed to pick out five pieces of lottery papers and they were asked the five questions resembling the number in the list of questions.*

Results: *Out of the total 280 students, 74.6% were living in hostel and 25.4% were day scholars, and majority (63%) of them were females. Fifty two percent of the students either could not sleep at all or slept just for 1 to 1.5 hours while 12% slept for 5 to 6.5 hours. Two-third (66%) of the students was able enough to achieve one to two scores, and only 1.8% could succeed to get the maximum score of five. There was statistically significant correlation between hours of sleep preceding examination and the score achieved ($r=0.701$) and ($p<0.001$).*

Conclusion: *Most of the medical students either do not sleep or sleep only for few hours preceding examination that result in poor performance in examinations.*

Keywords: *Sleep, Students, Medical, Scores.*

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INTRODUCTION:

Mental and physical health has a direct impact by the quality of sleep. Duration, quality and timing of sleep are the critical issues directly linked with the performance [1,2]. About 82-90% of the students sleep less during examination days due to fear of examinations [3,4]. Furthermore, first year medical students face more academic stress due to newer environment of medical education [5]. Though examination in any form is a method of evaluating the students, theoretical paper examination and viva examinations are different. In theory examinations, questions are of different types and students have choice for solving easy questions first and think for answer [6]. But, the scenario is just opposite in viva examinations. Additionally, examiner may ask a simple question in a difficult way or many questions from a single topic based on questions arising from the answers and so forth. This makes viva sort of examination even more tough and asks for a good night sleep for the students to be mentally active enough to score good in viva examinations [7-9].

MATERIALS AND METHODS:

This was a cross-sectional prospective study conducted among fourth and final year MBBS students of Quaid-e-Azam Medical College, Bahawalpur, who were appearing in their annual examinations. The study was carried out from November and December 2019. Using non probability convenient sampling 280 students were included based on inclusion criteria of the study. Two sets of questions from the syllabus of fourth and final year MBBS curriculum of the college were prepared. Each of the two sets contained 50 carefully selected lists of questions from the syllabus of fourth and final year MBBS courses.

All of the students were kept in a big hall and based on their roll numbers, one student at a time was called for the interview. Number one to 50 were written in small uniform sized square piece of papers, folded and kept in a vessel. Each of the students was asked to pick randomly five pieces of the lottery paper from the vessel and they were asked the five questions from the list according to the lottery numbers. One score was allocated for each correct response. Out of a maximum of five scores allocated for five questions, scores obtained by the students based on their performance were noted. After the interview was over, the interviewed student was not allowed to meet the remaining students to avoid sharing of the questions asked. Informed consent was taken from all of the participants and the students agreed to participate in the study were only enrolled. This study was approved by the Institution Review Board (IRB) of the Quaid-e-Azam Medical College, Bahawalpur.
Regarding the data on sleep habit, every student was asked about the time they slept in preceding night and woke up and the hours of sleep was calculated. Due to annual final examination system, students have to tackle with larger contents of the subjects. Examination of some of the subjects are conducted every day without any gap and students have to appear in them. As a result, students hardly get time to sleep in daytime or even at night during examinations. Therefore, the students who did not sleep at daytime were only included in the study. Similarly, students with a habit of drinking alcohol and smoking were excluded from the study. But the students who consumed either coffee or tea were included because it is quite common among the students to have coffee or tea during examination days.

Data were entered in IBM SPSS Statistics 21 and analyzed for descriptive and inferential statistics. The results were expressed as counts and percentages. Associations were tested using the chi-square test. Pearson correlation test was used to see the correlation between the students' hours of sleep preceding viva examination and the scores achieved. A priori p value <0.05 was considered statistically significant throughout the analyses.

RESULTS:

Out of the total 280 students, 176 (63%) were females followed by males 104 (37%). About three-fourth (74.6%) of the students were living in college hostel and the remaining one-fourth (25.4%) were day scholars. About 48% of the students were from fourth year and the remaining 52% students were from final year of MBBS program. Median score and (IQR) achieved by the students was 2 (1-3).

Table 1 illustrates the pattern of hours of sleep preceding the examination. More than one half (52%) of the students either could not sleep at all or slept just for 1 to 1.5 hours. On the other hand, less than 12% slept for a significant number of hours, i.e. 5 to 6.5 hours. About two third (66%) of the students were able enough to achieve one to two scores out of a total of five scores whereas, only less than two percentage of the students could succeed to get the maximum or highest score (Table 2). Though passing examinations and having grip on contents of subject matter are interrelated, they are not always true. In this study, we categorized the students in four classes based on the scores they gained in examinations. The students who secured 1 to 2 scores were labelled as 'below average'. Similarly, 3 scores (average), 4 scores (above average) and 5 scores (outstanding).

Chi-square test was used to see the difference in scores gained between male and female and it was statistically insignificant (p=0.143). The correlation between hours of sleep preceding examination and the score achieved was positively (r=0.701) and

statistically significantly (p<0.001) correlated. There were no statistically significant differences in association between the year (fourth and final year) students and gender (p=0.464) and age (p=0.087). Additionally, the association between living place of the students and the score gained was also insignificant (p=0.128).

Table1: Hours of Sleep preceding exam (n=280)

Hours slept preceding exam	Number	Percentage
0 hour	47	16.8
1 to 1.5 hours	99	35.3
2 to 2.5 hours	49	17.5
3 to 3.5 hours	19	6.8
4 to 4.5 hours	33	11.8
5 to 5.5 hours	23	8.2
6 to 6.5 hours	10	3.6

Table2: Scores obtained (out of five)

Score/marks achieved	Number	Percentage
1 score	125	44.6
2 score	60	21.4
3 score	58	20.7
4 score	32	11.4
5 score	5	1.8

DISCUSSION:

Medical education is a highly sensible and difficult field and it has direct practical implication on human life. Therefore, this profession is considered as the most respectful in the society. In medical education, there are various subjects and students have to study them in integrated manner as they have to appear in exam in integrated manner [10,11]. This impose more stress on medical students and thus it becomes hard for them to pass in examinations [12,13].

About 63% of the students who participated in the study were females. This is in accordance with the study conducted by Rizwi et al in Pakistan found an opposite trend in which about 78% of the medical students were females [15]. There can be various factor for gender preference for medical education however motivation of girls towards medical education is increasing in recent times [16].
Fifty two percent of the students were from final year of the MBBS course and majority of them were from hostel compared with the fourth year students. Astonishingly no significant difference in results was found between students living in hostels or homes.

Sleeping less number of hours during examinations compared with usual days is quite common however; it is surprising to know that more than one half (52%) of the students either could not sleep at all or slept just for 1 to 1.5 hours in preceding night of examinations. This is due to intensified fear of examinations among the medical students [17]. The pattern of sleep and study in usual days is very irregular among the students [18]. Another important component is the timing of sleep. It is quite usual among the medical students to have altered timing of sleep during examination days [19]. This further causes more stress on students and ultimately leads to failure in examinations [20,21].

Gender does not have any significant differences on hours of sleep and score gained. Likewise, there were no significant differences between the year (fourth and final year) students and gender, and age. The association between nationality of the students and the score gained was also insignificant. However, there was strongly positive correlation between hours of sleep preceding examination and the score achieved. Thus, proper and sufficient hours of sleep preceding examination are vital to score good in viva examinations.

There was no structured questionnaire for data collection in this study. There is chances of individual variation, question types during the viva examination which cannot be taken into consideration.

CONCLUSION:

There is a trend among the medical students either not to sleep or sleep only for few hours preceding viva examinations. Furthermore, students who did not sleep properly in preceding night could not be able to respond well in viva and ultimately their performance is poor.

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