

A Survey on Sleep Quality and its Influencing Factors among College Students

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Abstract: In order to understand the current situation of college students' sleep quality and its influencing factors, and to propose targeted solutions and suggestions to improve students' sleep quality, this paper did a survey on sleep quality of 514 ordinary college students in grades 1-3 from a university in Sichuan Province. The Pittsburgh sleep quality index scale (PSQI) and self-made Questionnaire was used to evaluate students' sleep quality, data was calculated and analyzed through SPSS 25.0 to figure out the problems and influencing factors existing in students' sleeping patterns. Results revealed that the majority of students sleep well, there were no significant differences among genders and majors. However, there were significant difference among students of different grades ($P < 0.05$). The proportion of students with sleep problems increases with grade level. Additionally, about 1/3 of students' sleep efficiency was lower than normal Standard. The author suggests that the school should take comprehensive measures to improve the quality of students' sleeping and promote the development of their physical and mental health.

1. Introduction

Sleep is one of the basic life activities of human beings, which plays an essential role in human physiological function and mental health. It is an effective way for people to eliminate fatigue and restore energy. High-quality sleep can reactivate information, improve memory storage process [1], and promote normal metabolism and growth. Long-term inadequate sleep would cause psychological problems such as depression and anxiety [2][3][4]. Moreover, the risk of cardiovascular, endocrine and other systemic diseases would increase [5][6]. According to *China Healthy Sleep White Paper in 2023*, 60.4% of respondents had sleep problems, such as sleep difficulties and light sleep [7]; sleeping quality of contemporary college students is not optimistic. According to survey, the incidence of sleep disorders among Chinese college students is 16.2%~40.2%, and is deteriorating [8], which has a profound negative impact on individual behavior and academic performance. Therefore, it is particularly important to understand students' sleeping status, give some targeted suggestions and guidance to improve overall students sleeping quality.

2. Research object and Methods

2.1 Research Object

From April 2023 to July 2023, this study took students from an university in Sichuan province as objects. Inclusion criteria is as follows: students was full time college students, and was informed in advance and agree to take part in the completion of the questionnaire survey voluntarily. Excluding invalid data such as missing answers, 514 valid questionnaires were obtained. Among participants, there are 148 males and 366 females, which include 101 students major in Health Service and Management, 76 students major in Medical Information Engineering, 40 students major in Intelligent Medical Engineering, 297 students major in Medical Imaging Technology; Participants include 290 freshmen, 142 sophomores and 82 junior students.

2.2 Instruments and Methods

2.2.1 Pittsburgh sleep quality index, PSQI

The Pittsburgh Sleep Quality Index is the self-evaluation scale of sleep quality proposed by

Buysse in 1989 [9]. This table is used to measure the sleeping quality in the past one month. It has satisfied reliability and validity, easy to understand and analyze, and is suitable for all kinds of people. The scale includes 19 self-assessment items (the 19th self-assessment item is not adopted in scoring) and 5 other assessment items (not adopted in scoring). The 18 self-assessment items which is adopted in scoring is divided into seven dimensions, namely: sleep quality, falling asleep time, sleep duration, sleep efficiency, sleep disorders, hypnotic drugs and daytime dysfunction. Each item is assessed in terms of 0~3 points- four- levels, total score range is 0~21 points, the higher the score suggests the worse sleep quality, PSQI score which is greater than 7 suggests sleep disorders [10].

2.2.2 Self-Made Questionnaire of General Situation Investigation

It is used to collect the basic data of the subjects, including gender, grade and major.

2.3 Statistical Analysis

Statistical analysis was performed by SPSS 25.0. Firstly, the original scores of 7 dimensions were calculated according to the answers to each question in the PSQI scale. After the original scores of each dimension were converted into standard scores ,it were added up to obtain the students' PSQI. The effects of sleep quality and related factors were analyzed by basic analysis methods such as frequency and cross table, and $P < 0.05$ was considered as statistically significant.

3. Results

3.1 Overall Sleep Quality of Students in an University in Sichuan

The survey results showed that the median, mode, and mean of the sleep quality score of 514 students, namely the PSQI score were 5.00, 4.00, 5.46 individually. The PSQI score tended to be positively skewed, indicating that the scores were relatively low, which suggests that the sleep quality of students was generally good. At the same time, the results showed that 22.37% of students had sleep problems, and there was a significant correlation between sleep quality and the grade of the students.

3.1.1 Differences in Sleep Quality among Students of Different Genders, Majors, and Grades

As can be seen from Table 1, there is no significant difference of sleep quality between students of different genders and majors. However, "grade" significantly affects students' sleep quality ($P=0.01 < 0.05$). The higher the grade, the greater the proportion of students with sleep problems, which is recognized to be related to the upcoming pressure of postgraduate entrance exams, future employment and heavy academic workload.

Table 1. Single-Factor Analysis Table

| Target | | Sleep Quality | | High Sleep Quality Ratio | χ^2 | P |
|--------|---------------------------------|---------------|-----|--------------------------|----------|-------|
| | | High | Low | | | |
| Gender | Male | 123 | 25 | 83.11% | 3.596 | 0.058 |
| | Female | 276 | 90 | 75.41% | | |
| Major | Health Services and Management | 76 | 25 | 75.25% | 2.774 | 0.428 |
| | Medical Information Engineering | 55 | 21 | 72.37% | | |
| | Intelligent Medical Engineering | 30 | 10 | 75.00% | | |
| | Medical Imaging Technology | 238 | 59 | 80.13% | | |
| Grade | Freshman | 238 | 52 | 82.07% | 9.279 | 0.01 |
| | Sophomore | 106 | 36 | 74.65% | | |
| | Junior | 55 | 27 | 67.07% | | |

3.2 Analysis of Reference Indicators for Evaluating Sleep Quality of College Students

This study analyze four indicators of Pittsburgh Sleep Quality Index scale, including sleeping time (time to go to bed), time required to fall asleep, sleep duration, and sleep efficiency, to further reveal and understand the problems of students' sleep quality, which provide a basis for subsequent

suggestions for improving sleep quality. The results are as follows.

3.2.1 Sleeping time

Sleeping time refers to the "time to go to bed" in the PSQI index. Regular rest and work habits are beneficial to physical and mental health, following the physiological mechanism and natural laws of the human body is an important manifestation of regular rest and work habits, and plays an important role in sleep quality. Therefore, it is necessary to investigate and study the time to go to bed of college students [11]. This survey found that students' sleeping time is concentrated between 23:00-0:00, accounting for 85.41%, of which nearly half of the students could fall asleep at 23 o'clock; 7% of the students could fall asleep before 23:00; 62.65% of the students could get up between 6:00-8:00. From the perspective of sleeping and getting up time alone, the students' rest and work schedule is reasonable.

3.2.2 Time Required to Fall Asleep

The time it takes to fall asleep, known as sleep latency, is an important indicator of an individual's sleep quality [12]. According to this survey, 58.95% of students fall asleep within half an hour, 24.51% took between half an hour and an hour to fall asleep, and 16.54% took more than an hour. More than 40% of students took a slightly longer time to fall asleep, with some students taking 4-5 hours to fall asleep in bed. Further analysis is needed to identify the causes and address the issues accordingly.

3.2.3 Actual Sleep Duration

The standard for healthy sleep duration for adults in China is 7-8 hours. Some studies pointed out that if adults sleep for 7 hours a day, the mortality rate due to all causes, cardiovascular disease, and other causes would be minimized [13]. The survey found that 47.67% of students actually slept for less than 8 hours, of which 31.43% slept for less than 7 hours; 3.11% of students had insomnia and had taken drugs to help sleep, which should be taken seriously.

3.2.4 Sleep Efficiency

Sleep efficiency in the PSQI scale equals sleep duration/time on bed×100%. The evaluation criteria is $\geq 85\%$. According to the survey, only 67.32% of students' sleep efficiency meets the normal standard. Combined with the above analysis, although 96.3% of students' bed time meets the healthy sleep duration of not less than 7 hours, the long time spent on falling asleep leads to short actual sleep time, and the overall sleep efficiency of students is low. At the same time, the survey data also reflects that most students have a strong desire to fall asleep. By analyzing the factors that affect students' sleep and intervening, the research can guide and help students improve their sleep efficiency and sleep quality.

3.3 Factors Affecting Students' Sleep Quality

There are many factors that affect sleep quality, including stress, environment, poor sleep habits, and physical illness etc.. Only 18.09% of the students in this survey reported factors that affect sleep, and 44.09% of the feedback information came from students with sleep disorders. It can be seen that some students are not aware of the causes of their insomnia and need further targeted analysis. The main factors that students reported affecting their sleep are shown in Table 2:

Table 2. Factors Affecting Students' Sleep

| | Reason | Quantity | Proportion |
|--------------------------------------|---|----------|------------|
| Sleep Influencing Factors (N=514) | Pressure | 43 | 46.24% |
| | Dorm Environment | 32 | 34.41% |
| | Mobile Phones and other Electronic Products | 9 | 9.68% |
| | Light Sleep | 6 | 6.45% |
| | Daytime Activities | 3 | 3.23% |

4. Suggestions for Improving Sleep Quality for College Students

4.1 School should Plan , Promote Students' Awareness of the Importance of Sleep and Help them Improve their Sleep Quality

Sufficient sleep, balanced diet and appropriate exercise are commonly recognized as three health standards , and they are also healthy lifestyles that students should develop and adhere to during their college years. Medical research show that sleep deprivation can affect an individual's working memory ability, such as prolonged reaction time and decreased accuracy rate [14]. Sleep disorders can even affect the suicide behavior of college students who have been bullied online as an intermediary variable [15]. This survey shows that although students' schedules are relatively reasonable, more than 40% of them have problems with long sleep latency and low sleep efficiency. Therefore, it is recommended that the school should take certain measures to guide and help students improve their sleep efficiency and sleep quality. For example, offering general courses on health management to popularize health knowledge including scientific sleep, enhance the health literacy of all students, and advocate a healthy lifestyle; at the same time, it is recommended to provide more fitness venues for students, offering group mindfulness yoga training for students with sleep problems [16], to increase the application of aerobic exercise combined with resistance training [17], to carry out sports activities and events more widely. School should effectively improve students' enthusiasm and breadth of participation in sports activities, which could improve the overall sleep quality of students.

4.2 Family and School should Work Together and Take Care of Students' Mental Health and psychological Counseling

This survey shows that stress is the main reason affecting students' sleep, which comes from emotional anxiety, academic pressure, emotional influence, employment, family economy, etc. Currently, the university has established a mental health education center for college students to provide psychological counseling services for all students. At the same time, it has also opened a general course on mental health education for college students to enhance their understanding of mental health knowledge and guide students to self-care and self-improvement. Each class selects and hires psychological committee members, and each dormitory sets up dormitory leaders to ensure that there is someone concerned about mental health work in the "smallest unit", and to timely discover and reflect problems. The relevant responsible person should intervene at the first time. Fully integrate six resources including instructor, mentors, teachers, parents, psychological committee members, and dormitory leaders. School should pay attention to students with psychological problems, take regular heart-to-heart talks, establish a "one student one file", timely study and judge students' psychological dynamics, and actively communicate with parents. The six resources form a joint force to jointly focus on students' mental health and participate in the whole process of students' mental health education.

4.3 Dormitory Culture Construction and Environment and Improvement are Necessary

The survey showed that the dormitory environment has a significant impact on sleep quality, mainly in terms of noise, such as noise from roommates or neighbors, and the living habits of roommates. Dormitory is an important place for students to live, study, and grow. With the completion of the new campus and the upgrading of the old campus, the hardware conditions of student dormitories have been greatly optimized. At the same time, it is necessary to continue to strengthen the construction of dormitory culture, creating a healthy, civilized, and positive dormitory cultural atmosphere, and further promote students to develop good and self-disciplined habits. Cultural construction would positively promote students' sleep quality.

5. Conclusion

In the context of the strategy of building a healthy China, the health concept of prevention first has been deeply rooted in people's hearts, and people would pay more attention to their own health and

their health needs are more diversified. Chinese college students, as a pioneering force with a historical mission to promote social progress and national development, their health status has become the focus of society. At present, insufficient sleep and poor sleep quality have become a problem for many college students, which leads to cognitive and learning efficiency decline, anxiety, depression and other psychological problems. Through the investigation of the sleep quality of college students in a university in Sichuan Province, this article discovers and finds the main factors that affecting students' sleep and provide suggestions. It is hoped that the school will pay attention to it, to guide and help students improve their sleep quality, to guide students to establish a correct view of health, develop good habits, and firmly establish the idea of "health first". School should build a healthy campus, and cultivate builders and successors with all-round development of morality, intelligence, physical fitness, aesthetics and labor for the construction of socialism with Chinese characteristics!

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