A Study on the Correlation Between Sleep Quality and Accidental Injuries Among University Students in Hainan

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Abstract: **Objective:** To analyze the correlation between sleep quality and accidental injuries among university students in Hainan, and to provide reference for improving injury prevention among university students. **Methods:** A total of 1100 college students from freshman to Senior Students in three universities in Hainan were selected by multilevel random sampling method, and investigated by Pittsburgh Sleep Quality Index (PSQI) and injury questionnaire. **Results:** The average PSQI score of Hainan university students was 7.645. In the five dimensions of sleep latency, sleep efficiency, sleep disturbances, sleep medication, and daytime dysfunction, as well as the PSQI total score, the differences between the accidental injury group and the non-accidental injury group were statistically significant ($P<0.01$), except for sleep quality and sleep time, all other dimensions and PSIQ total score were higher in the accidental injury group than in the non-accidental injury group. **Conclusion:** The problem of poor sleep quality among university students in Hainan were widespread, and the occurrence of accidental injuries among university students were related to the sleep quality.

Keywords: University Students; Sleep Quality; Accidental Injury

Introduction

Sleep was an important part of the body's physiological rhythm and was closely related to daily life. Having a good quality of sleep was the guarantee of a good life. Nowadays, univerity students faced pressure from various aspects such as study, employment, family and social changes, and long-term emotional tension and psychological overload caused a decrease in sleep quality, and poor or even very poor sleep quality could easily triggered a series of adverse reactions affecting physical and mental state. Relevant studies had confirmed that sleep problems in childhood and adolescence increased the risk of injury occurrence [1-3]. In this study, the correlation between accidental injuries and sleep quality among univerity students in Hainan was investigated by questionnaire, and to provide references for improving sleep quality and injuries prevention and control among univerity students in the future.

1. Subjects and methods

1.1 Research subjects and sampling method

Simple random sampling method was used to draw three universities in eight undergraduate institutions in Hainan Province, and then the stratified cluster sampling was used to draw a total of 1000 college students from three universities. 1200 questionnaires were distributed and 1017 valid questionnaires were actually returned, with an efficiency rate of 84.8%.

1.2 Research tools

1.2.1 Pittsburgh sleep index scale

The Pittsburgh sleep quality index was developed by Dr. Buysse, a psychiatrist at the University of Pittsburgh, USA, and others in 1989. This scale was used to assess the quality of sleep of the subject in the last 1 month, and consists of 19 self-rated and 5 other-rated items. The cumulative score of each component was the total PSQI score, which ranges from 0 to 2l. The higher the score, the worse the sleep quality. A PSQI score greater than 7 was usually used as the reference threshold for sleep quality problems in adults.

1.2.2 Injury assessment

The external causes of injuries are classified into 14 types, including road traffic injuries, poisoning, fall injuries, burns, crush injuries, sprains, cuts, animal bites, drowning, accidental asphyxiation,electric shock, consumer goods injuries, medical accidents and others, with reference to the International Classification of Diseases (ICD)-10 [5-6]. Injury assessment was based on the occurrence of the above-mentioned injuries in the past 1 year, and those who had one of the following conditions were judged to be the statistical subjects of injury [7]: (1) make a diagnosis and give treatment at medical units and diagnosis of a certain type of injury; (2) emergency treatment or care of the injured person by family members, teachers, colleagues or peers; (3) leave of absence (school closure, rest) for half a day or more due to injury.

1.3 Statistical methods

SPSS22.0 statistical software was applied for analysis. The t-test was used to compare between groups for measurement data. The test level was $\alpha=0.05$.

2. Results

2.1 General situation

Among the 1017 people surveyed, 500 (49.2%) were male and 517 (50.8%) were female; 160 (15.7%) were freshmen, 341 (33.5%) were sophomores, 286 (28.1%) were juniors, and 230 (22.6%) were seniors.

2.2 The relationship between the university students' sleep quality and the accidental injury

The mean score of PSQI for university students in Hainan was 7.645 ,with a standard deviation of 3.047.In the study population, the incidence rate of accidental injuries was 25.6%(260/1017).According to the injury assessment criteria, the surveyed students were grouped into the group with injuries and the group without injuries, and compared the difference of sleep quality between the two groups, the results showed that the dimensions of sleep latency,sleep efficiency, sleep disturbances, sleep medication, daytime dysfunction and the total PSQI score, the difference of accidental injury rate between the two groups was statistically significant ($P<0.01$). In addition to the dimensions of sleep quality and sleep duration, all other dimensions and PSIQ scores were higher than those of the no-injury group.

Table 1 The scores of each dimension in two groups of university students with and without accidental injuries (x±s)

	Had an accidental injuries（N=230）	No accidental injuries had occurred（N=787）	*t*	*P*

Sleep quality	2.813±1.009	3.181±0.949	4.862	＜0.01
Sleep latency	2.548±0.677	2.391±0.810	2.943	0.003
Sleep duration	2.261±0.857	2.487±0.937	3.438	0.001
Sleep efficiency	0.770±0.811	0.494±0.700	4.663	＜0.01
Sleep disturbances	2.970±0.767	2.358±0.749	10.686	＜0.01
Sleep medication	2.487±1.023	1.607±0.916	11.740	＜0.01
Daytime dysfunction	2.987±0.828	2.437±0.945	8.572	＜0.01
PSQI total score	16.834±2.708	14.939±2.654	9.486	＜0.01

3. Discussion

In this study, the results showed that the average PSQI score of Hainan university students was 7.645, which indicates that the problems of poor sleep quality among Hainan university students were widespread.It was found that the scores of sleep latency, sleep efficiency, sleep disturbances, sleep medication, daytime dysfunction dimensions and the PSQI score were higher for those who had experienced injury than for those who had not, indicating that sleep problems in the above aspects were potential risk factors for injury occurrence. It may be due to the long sleep latency, short sleep duration at night and sleep disturbances seriously affect the quality of sleep, which in turn leads to poor mental state during the day; as well as, the use of sleep medication, which to some extent affects physical health, and leads to the occurrence of accidental injuries.

For university students, the sleep problems exacerbated mental regulation and cognitive dysfunction under the influence of various factors, had making them prone to impulsive behavior[8]. In addition, for college students, frequent outings increase the probability of exposure to external hazards, poor sleep quality and poor personal state, poor resilience and slow reaction when dangerous situations arise, them more likely to get injured[9-11].

In summary, it can be seen that some of the Hainan college students have poor sleep quality problems, leading to accidental injuries. To improve the poor sleep quality of Hainan college students and reduce the occurrence of accidental injuries, it is recommended to start from the following aspects: first, the school should hold a lecture about sleep quality, explaining the importance of sleep quality, causing most male college students to pay attention to improving sleep quality. Second, schools should appropriately reduce the academic tasks of majors with heavy academic assignments, which will help improve students' sleep quality and thus improve their study efficiency. At the same time, schools should strengthen the management of dormitory lights-out bedtime situation, try to unify the sleeping time of college students and improve their sleeping habits. Finally, class counselors should care more about the psychological state of students in their classes, hold appropriate psychological counseling class sessions, and contact students to create a more harmonious relationship between them.

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Acknowledgment

Student Innovation and Entrepreneurship Project of Hainan Medical University in 2019 (No. X201911810003). The Natural Sciences in Hainan Province in 2019 (grant no. 319QN221).

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