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Association between anxiety and sleep quality in the general surgery residents of Udayana University

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Abstract

Background: Sleep quality not only affects physical health but also on individual performance. Anxiety is thought to associate with poor sleep quality. This study aims to determine the association between anxiety and sleep quality in surgery residents of Faculty of Medicine, Udayana University.

Methods: The subjects of the study were 48 surgery residents of Faculty of Medicine of Udayana University. The study used a cross sectional analytical method. Measurement of anxiety using the Beck Anxiety Inventory (BAI) and sleep quality questionnaire using the Pittsburgh Sleep Quality Index (PSQI). Data were analyzed descriptively and used the chi square test with significance level $p < 0.05$.

Results: The results showed that 33.3% of surgery residents of Faculty of Medicine of Udayana University had anxiety and most had poor sleep quality (87.5%). There is an association between anxiety and sleep quality in surgery residents of Faculty of Medicine of Udayana University with PR 3.0 (95% CI 0,9-9,1; $p < 0.005$).

Conclusion: This study shows that there is a significant relationship between anxiety and sleep quality where surgery residents of Faculty of Medicine of Udayana University with anxiety 3 times at risk of developing poor sleep quality than those without anxiety. Therefore it is necessary to manage anxiety as well as the arrangement of night shift to improve sleep quality.

Keywords: *anxiety, sleep quality, surgery resident, BAI, PSQI*

Introduction

Anxiety is a negative emotional state characterized by somatic disorders, such as heart beating fast, sweating, difficulty breathing. Anxiety is similar to fear but with a less specific focus. Anxiety is characterized by concerns about the unexpected danger that lies in the future, while fear is a response to an immediate threat.[1]

Anxiety disorder is one of the mental disorders that often occurs in societies with a worldwide prevalence of 2.5-7% in each country.[2] An estimated 284 million people worldwide experience anxiety disorders in 2017.3 Anxiety affects sleep quality.[4] The relationship of anxiety and sleep disorders is important to know because overcoming anxiety will improve sleep quality. Sleep is a physiological need for humans. Poor sleep and poor quality can cause impaired physiological and psychological balance.[1]

Sleep disorder is disorder that often occurs but are often ignored. Sleep disorders will affect one's health status, morbidity, and are associated with increased mortality.[5] Physiological and psychological effects that arise due to poor sleep quality include decreased daily activity, fatigue, impaired motor response, decreased endurance, stress, depression and anxiety. Lack of sleep

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can result in social disturbances, performance, learning achievement, mental health, and other functions.[6]

General Surgery residents at Sanglah General Hospital often have to deal with tiring and unexpected schedules, financial challenges, as well as difficult emotional problems, high levels of stressors, and very potentially cause anxiety. Especially doctors participating in surgical specialist education programs. This anxiety can cause sleep quality disorders. Side effects of disruption of sleep quality, namely: drowsiness, reduced alertness, impaired concentration of attention, impaired cognitive function to perform complex functions, and impaired executive function so that it will affect the academic ability of students.

This study aims to determine the relationship between anxiety and sleep quality among the General Surgery residents of Udayana University.

Methods

This was an observational, analytic, cross-sectional study, using randomized sampling. The subjects were the General Surgery residents of Sanglah General Hospital. The study protocol was approved by the institutional review board of Sanglah General Hospital.

The inclusion criteria were General Surgery residents who were willing to be included in this study by signing a written informed consent. The exclusion criteria were the ones who were undergoing physical and mental pain therapy.

Anxiety was measured by the Beck Anxiety Inventory (BAI) questionnaire. BAI has passed the reliability and validity test based on Cronbach's alpha assessment with a value of 0.94.7 Sleep quality was assessed by the Pittsburgh Sleep Quality Index (PSQI) questionnaire. This instrument has been tested for reliability and validity based on Cronbach's alpha assessment with a value of 0.83.[8]

The data obtained were analyzed with the help of statistical programs on the Statistical Package for Social Science (SPSS) version 21. A p-value of <0.05 was considered statistically significant.

Results

There were 48 subjects enrolled in this study. Most of the study subjects were male (85.4%). The subjects of this study were mostly using addictive substances (52.1%) in the form of cigarettes and coffee (Table 1). Table 2 shows the results of the BAI and PSQI score. As displayed, most of the subjects were not anxious (66.7%) and have poor quality of sleep (87.5).

Table 1. *Subjects characteristics*

Variables	Value
Age (years), mean±SD	30.4±3.4
Gender, n(%)	
Man	41 (85.4)
Woman	7 (14.6)
Marital status, n(%)	
Married	28 (58.3)
Not Married	20 (41.7)
Semester, n(%)	
1-4	29 (60.4)
5-12	19 (39.6)
Addictive substances, n(%)	
Yes	25 (52.1)
No	23 (47.9)

SD: *standard deviation*

Table 2. *Results of assessment of anxiety and sleep quality*

Variables	Value
BAI, n(%)	
Anxiety	16 (33.3)
Not worried	32 (66.7)
PSQI, n(%)	
Bad	42 (87.5)
Good	6 (12.5)

BAI: *Beck Anxiety Inventory*; PSQI: *Pittsburgh Sleep Quality Index*

Table 3. *The distribution of sleep quality based on anxiety*

		Sleep Quality				PR	95% CI	*p*
		Bad		Good				
		N	%	N	%			
Anxiety	Present	6	37.5	10	62.5	3.0	0.9-9.1	0.044
	Absent	4	12.5	28	87.5			

CI: *confidence interval*

In this study, there was a difference in the proportion between anxiety and non-anxiety states between subjects with poor sleep quality and good sleep quality (p=0.044). The subjects who are in anxious state has triple the chance of experiencing poor sleep quality compared to those who are not anxious (Table 3).

Discussion

From this study it was found that the average age of the subjects was 30.4±3.4 years. Research by Tomlinson *et al*., the average age of a surgical resident is 30 years, and dominated also by male and married status. This study was also dominated by male sex with a greater percentage (85.4%) but dominated by married people (58.3%).

About half of the subjects consume a reasonable amount of coffee or cigarettes. They consumed an average of two cups of coffee a day and smoked 3-6 cigarettes a day. By statistical analysis, these addictive substances did not affect anxiety about sleep quality. None of the subejects take sleeping pills, anti-anxiety drugs, anti-depressants medications, or narcotics.

This study shows anxiety in General Surgery residents was 33.3%. This is in accordance with research by Dave *et al.* in their research on the prevalence of depression, anxiety and stress in resident doctors in teaching hospitals in India, where the prevalence of depression in resident doctors was (27.1%), anxiety (36.58%), and stress (24.24%). They also mentioned that variables such as junior semesters, long working hours, no job satisfaction, no hobbies, and living in a boarding house gave significantly high levels of depression, anxiety, and stress. These variables were not measured in our research.

Most subjects reported poor sleep quality by PSQI (87.5%). This is similar to a cross-sectional study conducted in 2017 about sleep quality in resident doctors. More than a third of resident doctors experience daytime sleepiness based on poor Epworth Sleepiness Scale (ESS) scores. This significantly affects aspects of their quality of life, including physical health, body aches, and general health. It is said that health promotion is needed regarding sleep and quality of life for resident doctors.[13]

Al-Saif in his research on the prevalence and risk factors of poor sleep quality in 1205 resident doctors in Saudi Arabia showed that 86.3% of the subjecs reported poor sleep quality. The on-call schedule and night duty are the main risk factors for poor sleep quality in his research and it is recommended that working hours be limited to 80 hours a week.[14] Some residents with normal sleep at the beginning of the residency end up having severe sleep disturbance, some even more severe than those who already have sleep disorders before. Recognition and management of fatigue are very important.[15-19]

This research shows that there is a positive relationship between anxiety and sleep quality. This is similar to previous research on the relationship between anxiety levels and sleep quality in 278 medical students at the undergraduate, graduate, and doctoral levels. They reported that people with high stress levels had various levels of psychological suffering such as anxiety and depression. The results of the study showed that 73% of students experienced moderate anxiety and severe anxiety, and 46.4% had a PSQI score of ≥5 which reflects a poor sleep quality ($p < 0.001$).[16]

A study that assessed the relationship between anxiety, sleep quality, the branch of medicine studied and hours of work, the number of tasks and daily habits of resident doctors in a hospital in Turkey showed that surgical resident doctors have anxiety levels related to sleep quality significantly poor ($p=0.007$).[20]

Al Ajmi's study 19 of all 71 Saudi Joint Program of Family Medicine resident doctors assessed the quality of their sleep compared to doctors in primary care. The study showed that residents in the earlier semester (first and second years) had a poor sleep quality compared to the last semester (third and fourth years). This is explained by more rotations and on-call tasks at this level. The study also showed that marital status significantly influences sleep quality, where married doctors have worse sleep quality than unmarried. However, this is not the case in the author's study, where after being controlled by analysis, it was found that marital status did not affect sleep quality.

Sargent *et al.*[18] in his research on anxiety and coping in 21 orthopedic surgery residents found that high levels of emotional exhaustion in residents were associated with anxiety about clinical competence ($p < 0.02$), increased conflict between work and home life ($p < 0.001$), relationships with senior residents ($p < 0.07$), and perceptions of their work or education ($p < 0.002$).

There is always an increased risk of disruption of sleep quality to mental and physical morbidity due to working on a tight schedule and changes in sleep wake cycle patterns. Poor sleep quality can cause various neurophysiological and psychological imbalances such as decreased alertness and mood changes that can affect individual performance.

The research has several limitations. The first limitation is that this study was a cross-sectional design in which data collection is carried out once without follow-up. Secondly, subjects may tend to give more "acceptable" answers than "honest" answers to the questionnaire. Third, knowing the many factors that can affect anxiety and the quality of sleep, there are always a number of other biases that cannot be controlled. Last, the writer used BAI as an anxiety questionnaire and PSQI as a sleep quality questionnaire. The use of other questionnaires to assess anxiety and sleep quality in other studies can be a challenging comparison.

Conclusion

The prevalence of anxiety in the residents of General Surgery of Udayana University was 33.3%. The sleep quality was mostly poor at 87.5%. There is a significant relationship between anxiety and sleep quality amonst the study subjects.

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