

# Correlation between Anxiety and Insomnia among Medical Student of Udayana University Class of 2016

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**Abstract:** Anxiety is becoming more common condition among adolescents and university students in Indonesia. Insomnia is also a common issue among the academic population in Indonesia. The increase in anxiety and insomnia can be linked to the increased stress of student life and activities. This research aims to identify the correlation between anxiety and insomnia among medical students at Faculty of Medicine Udayana University years of study 2019. The study design was cross-sectional observational analysis is done by distributing questionnaires to 144 respondents conducted in March 2020. Insomnia is measured by KSPBJ-Insomnia Rating Scale (KSPBJ-IRS) and anxiety by Depression Anxiety Stress Scale-21 (DASS21). Samples were taken by simple random sampling technique. Analysis of data using SPSS version 23 by chi square test. The result showed that only 25.4% of students had insomnia. However, the result showed that 56.3% of students had anxiety. A cross tabulation report that 45.7% of respondents who experienced insomnia also experienced anxiety. There is a moderate correlation between anxiety and insomnia among medical students ( $r=0,522$ ;  $p=0.000$ ). Therefore, it needs concern to know health impacts.

**Keywords:** Anxiety, anxiety disorder, insomnia, sleep disturbances, correlation, medical students.

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## 1. INTRODUCTION

Anxiety is an emotion characterized by feelings of tension, worried thoughts that might be triggered by events that threaten the individual. Other than emotional changes, anxiety can cause physical changes like sweating, trembling, dizziness, rapid heartbeat, and increased blood pressure. People with anxiety disorders usually have recurring intrusive thoughts or concerns.<sup>[1]</sup> The prevalence of anxiety disorders in general population is 7.3%. A systemic review concluded that prevalence of anxiety is 5.3% in African countries while the prevalence of anxiety is 10.4% in European and Western countries.<sup>[2]</sup> Individuals from Indo/Asian cultures reported the lowest prevalence at 2.8%.<sup>[3]</sup>

Insomnia is a common condition characterized by difficulty initiating or maintaining sleep, accompanied by symptoms such as irritability or fatigue during wakefulness. The prevalence of insomnia disorder is approximately 10-20%, with approximately 50% having a chronic course.<sup>[4]</sup> Insomnia is the most prevalent sleep disorder in adolescent individuals with a 10.7% lifetime and a 9.4% current prevalence according to the Diagnostic and Statistical Manual of Mental Disorders (DSM) fourth edition (DSM-IV).<sup>[5]</sup> Prevalence of insomnia in China with a total of 17 studies with 115,988 participants is 15.0%.<sup>[6]</sup> A study conducted in Turkey reported the prevalence of insomnia to be 51%.<sup>[7]</sup> Difficulty in initiating sleep is also strongly associated with anxiety.<sup>[8]</sup> The greater the severity of anxiety the higher the incidence of insomnia.<sup>[9]</sup>

A recent systemic review research concluded that majority of researches agree there is a plausible bidirectionality between sleep disturbances and anxiety.<sup>[10]</sup> A case-control study in China in 2018 showed that patients with paradoxical insomnia and psychophysiological insomnia had significantly higher mean Self-Rating Anxiety Scale (SAS) scores compared to normal sleepers that took the SAS.<sup>[11]</sup> A cross-sectional designed study conducted at Saint-Joseph University, Lebanon with the objective examine the relationship between students with sleep disorders and anxiety. Results show

that 37.1% of students that had sleep disturbances where 50.8% of the poor sleepers have anxiety based on their Generalized Anxiety Disorder 7-item scale (GAD-7) score.<sup>[12]</sup>

There is also a high prevalence of anxiety and insomnia in medical students. This meta-analysis, found the prevalence of anxiety to be 33.8% among medical students globally, which is substantially higher than the general population.<sup>[13]</sup> A cross-sectional survey reported a high anxiety prevalence of 66.9% among medical undergraduate students.<sup>[14]</sup> Medical education has been shown to be hazardous to students' health and create an environment of psychological toxicity. Medical students present higher levels of stress when compared with other young people of the same age in other programs.<sup>[15]</sup> This can be caused by various obligatory medical student activities in campus, both academic activities and organizations. Other problems such as interpersonal relationships and staying away from parents for those who are non-native. This can be a trigger for stress, anxiety that can be a major risk factor for insomnia.<sup>[16]</sup> Studies with medical students have found that during the first year of medical school students had deficit in hours of sleep, physical activity, and social interactions.<sup>[17]</sup> Therefore, in this study the researcher wants to examine the correlation between anxiety and insomnia among medical students from 2019 batch in Udayana University.

## 2. METHODOLOGY

This analytical research with cross-sectional design was conducted using random sampling method. This study was designed to investigate the correlation between anxiety and insomnia among medical students from 2019 batch in Udayana University. It was conducted for a period of 1 week from 19 March to 26 March 2020 at the Faculty of Medicine in Udayana University, Bali, Indonesia. Subjects are included in this research if subjects are actively registered as medical students in 2019 batch at Udayana University. Subjects are excluded in research if subjects are not actively registered as medical students in 2019 batch at Udayana University and/or have one or more confounding factors which is depression, consumption of psychostimulants or alcohol within a certain amount or use medications that are antidepressants, steroids, anticonvulsants, beta agonists, diuretics or beta blockers. Anxiety was measured using the Depression, Anxiety and Stress Scale – 21 (DASS-21) while insomnia was measured using the KSPBJ-Insomnia Rating Scale questionnaire. The total sample for analysis consisted of 144 samples where 18 respondents were excluded leaving a final of 125 samples for data analysis. Univariate analysis is carried out to explain or describe each research variable. Data was analyzed to see the distribution and percentage of each variable, and presented in the form of tables. Bivariate analysis uses chi-square statistical tests to determine the correlation between anxiety and insomnia. Multivariate data analysis uses logistic regression test with the aim to find out what variables most influence the occurrence of anxiety and insomnia. Statistical analysis for bivariate and univariate analysis was done using SPSS (Statistic Program for Social Science).

## 3. RESULTS AND DISCUSSION

### 3.1 Characteristics of Respondents

Table 1 shows the distribution of demographic data, in this study there were 57 (44.7%) male students who became study respondents while the number of female respondents was slightly higher at 63 people (55.4%). There were 9 students who took non-confounding medications in this study, 1 student took amoxicillin, CTM, domperidone, loratadine, omeprazole, and otopain each. There are 3 students who took paracetamol. A total of 19 students (15.1%) claimed to consume alcohol less than 7 times a week and 25 students (19.8%) consumed 1-2 cups of coffee each day. There were no respondents who were or had ever taken psychostimulant drugs.

**Table 1: Characteristic distribution of respondents**

Characteristic	Frequency (%)
Gender	57 (44.7)
Male	69 (55.3)
Female	
Medication History	
Amoxicillin	1 (0.8)
CTM	1 (0.8)
Domperidone	1 (0.8)
Loratadine	1 (0.8)
Omeprazole	1 (0.8)
Otopain	1 (0.8)
Paracetamol	3 (2.4)

Alcohol consumption	
Never	107 (84.9)
<7 times a week	19 (15.1)
Coffee consumption	
Never	101 (80.2)
1-2 glass daily	25 (19.8)
Psychostimulants consumption	
Never	126 (100)
Have consumed	0 (0.0)

### 3.2 Insomnia status of respondents

Table 2 shows that the respondents fill out a questionnaire to determine the status of insomnia and anxiety. The KSPBJ-IRS questionnaire was used to determine insomnia status in respondents, this questionnaire consists of 8 questions related to respondents' sleep habits with a value per item of 0-3. Respondents who get a total score below 8 are said to have no insomnia, while a total score of 8-13 are classified as mild insomnia, 13-18 moderate insomnia and total values above 18 are classified as severe insomnia. The total value of the respondent KSPBJ-IRS was analyzed by the distribution normality using the Kolmogorov Smirnov test and it was found that the data distribution was not normal ( $p < 0.05$ ), so that at the time of data analysis the groups were divided into 2 groups namely insomnia and not insomnia. The lowest value obtained from KSPBJ-IRS of respondents is 3.0 with a maximum value of 12.0 and the average value obtained is  $7.15 + 2.2$ . There were 94 respondents (44.6%) who did not experience insomnia while the remaining 32 respondents (25.4%) were classified as mild insomnia. There were no respondents who experienced moderate or severe insomnia. The complete data can be seen in table 2

**Table 2: Insomnia status of respondents**

Characteristics	Frequency (%)
Total KSPBJ-IRS score (median, IQR)	7.0, 3.0
No Insomnia	94 (74.6)
Mild Insomnia	32 (25.4)

### 3.3 Anxiety status of respondents

DASS 21 questionnaire is used to assess the anxiety of the respondents. Questions that refer to anxiety are in numbers 2, 4, 7, 9, 15, 19 and 20. Respondents' answers are of a scale of 0-3, where the total score of the number added together and grouped to see the severity of anxiety. The score results for related items are multiplied by 2. Respondents who get a total score of 0-7 are said to be normal / not anxious, while respondents with grades 8-9 are grouped in mild anxiety, 10-14 moderate anxiety, 15-19 severe anxiety and scores  $> 20$  are classified as very anxious. In this study, the lowest DASS 21 score was 0.0 and the highest was 16.0 with a mean total of  $7.06 + 3.4$ . There were 55 respondents (43.7%) who did not report anxiety, 42 respondents (33.3%) experienced mild anxiety, 28 respondents (22.2%) experienced moderate anxiety and 1 respondent experienced severe anxiety. No respondent experienced very severe anxiety. The complete data can be seen in table 3.

**Table 3: Anxiety status of respondents**

Characteristic	Frequency (%)
Total DASS 21 score (median, IQR)	8.0, 5.0
No anxiety	55 (43.7)
Mild anxiety	42 (33.3)
Moderate anxiety	28 (22.2)
Severe anxiety	1 (0.8)

### 3.4 Correlation of anxiety and insomnia

A cross tabulation was carried out to see the correlation between anxiety and insomnia in Udayana University medical students in class 2019. Based on table 4, it can be seen that there were 45.7% of respondents who experienced insomnia

who also experienced anxiety while from all respondents who did not experience anxiety also did not experience insomnia. It was found that anxiety had a moderate correlation with insomnia ( $r = 0.522$ ;  $p = 0.000$ ). The complete data can be seen in table 4.

**Table 4: Cross tabulation betenn anxiety and insomnia**

Characteristic	Insomnia Status		r	p
	No insomnia	Insomnia		
Anxiety status			0.522	0.000
No anxiety	56 (100.0)	0 (0.0)		
Anxiety	38 (54.3)	32 (45.7)		

#### 4. CONCLUSION

Based on the research done it can be concluded that there is a significant relationship between coffee consumption and sleep quality among medical students from 2016 batch in Udayana University. Medical students from Udayana University should be aware of their anxiety levels as it can affect their sleep quality. For further research, risk factors of medical student developing anxiety and insomnia can be conducted. As anxiety and insomnia can greatly decrease the effectiveness of studying and lead to depression, it is necessary to understand the full health implications on students. Moreover, replication of this study in a large population-based sample is recommended to assess the stability of the findings.

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