

THE CORRELATION OF NOCTURIA INCIDENCE AND ANXIETY LEVELS DURING THE COVID-19 PANDEMIC

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ABSTRACT

Objective: This study aims to examine the relationship between nocturia and anxiety levels as precipitating factors in related study population. **Material & Methods:** This study used a survey facilitated via Google Form, using the International Consultation on Incontinence Questionnaire Nocturia, Zung Self-Rating Anxiety Scale, and a Demographic Data Questionnaire to obtain corresponding data. The descriptive-analytic method was applied, and Chi-square statistical analysis was performed. **Results:** From 270 participants, 240 exhibited normal anxiety levels, 28 demonstrated mild to moderate anxiety levels, and two presented severe anxiety levels. Furthermore, 148 participants reported experiencing nocturia, while 122 participants did not exhibit nocturia. **Conclusion:** This study showed no correlation between anxiety levels and nocturia in students from the Nutritional Science and Nursing Science Programs at Universitas Brawijaya, batches 2019, 2020, and 2021.

Keywords: Anxiety level, nocturia, covid-19.

ABSTRAK

Tujuan: Penelitian ini bertujuan untuk menguji hubungan antara nokturia dan tingkat kecemasan sebagai faktor pencetus pada populasi penelitian terkait. **Bahan&Cara:** Penelitian ini menggunakan survei yang difasilitasi melalui Google Formulir, dengan menggunakan International Consultation on Incontinence Questionnaire Nocturia, Zung Self-Rating Anxiety Scale, dan Kuesioner Data Demografi untuk mendapatkan data yang sesuai. Metode deskriptif-analitik diterapkan, dan analisis statistik Chi-square dilakukan. **Hasil:** Dari 270 partisipan, 240 partisipan menunjukkan tingkat kecemasan yang normal, 28 partisipan menunjukkan tingkat kecemasan ringan hingga sedang, dan dua partisipan menunjukkan tingkat kecemasan yang parah. Selain itu, 148 partisipan melaporkan mengalami nokturia, sementara 122 partisipan tidak menunjukkan nokturia. **Simpulan:** Penelitian ini menunjukkan tidak ada hubungan antara tingkat kecemasan dengan nokturia pada mahasiswa Program Studi Ilmu Gizi dan Ilmu Keperawatan Universitas Brawijaya angkatan 2019, 2020, dan 2021.

Kata kunci: Tingkat kecemasan, nokturia, covid-19.

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INTRODUCTION

Nocturia is a condition characterized by the need to void during sleep, occurring one or more times per night, as defined by the International Continence Society (ICS) in 2019.¹ Pathogenesis of nocturia can be attributed to various factors, such as reduced bladder capacity, either anatomically or functionally and excessive night-time urine production, which can be measured using the

Frequency Volume Chart (FVC) (>40 ml/kg in adults).² Anxiety is a natural physiological response to perceived threats; however, excessive anxiety levels can lead to Generalized Anxiety Disorder (GAD) to end organ damage. It is characterized by feelings of tension, worry, and physical changes, such as increased blood pressure.³ Heightened blood pressure activates the sympathetic nervous system, resulting in increased renal blood flow and more urine production, potentially leading to nocturia.⁴

Anxiety levels can be determined using the Zung-Self Anxiety Scale (SAS) questionnaire, with scores categorized as normal (20–44), mild to moderate (45–59), severe (60–74), and extreme (>74). University-level students are more susceptible to anxiety, especially during the COVID-19 pandemic, since they have reduced daily activities.⁵ The American College Health Association research showed that approximately 49.9% of students experienced anxiety caused by academic pressure.⁶ A survey conducted in Turkey with 221 medical students revealed that nocturia is a common symptom in medical students, with approximately 56.11% of those affected being female.⁷ This condition is highly multifactorial; not only adults can have these symptoms.

Until today, there are an unsatisfactory amount of studies, especially in Indonesia, investigating the incidence of nocturia in students and anxiety levels, especially during the COVID-19 era. Moreover, COVID-19 has a close correlation with anxiety, and prolonged exposure to this pandemic can lead to chronic anxiety that leads to nocturia.⁸ This research aimed to discuss the correlation between nocturia and anxiety among Nursing and Nutritional Science students at Universitas Brawijaya.

This is important to be discovered more since people aged 18–22 years are extremely productive during the day with lot of workloads; and experiencing nocturia can lead to decreased productivity and poor quality of life.⁹ Having to wake up every night to void can lead to reduced sleep quality thus increasing nocturnal blood pressure.¹⁰ Nocturnal blood pressure is a condition when the blood pressure is high during nighttime and is a common complication of essential and secondary hypertension.¹¹

OBJECTIVE

This study aims to examine the relationship between nocturia and anxiety levels as precipitating factors in related study population.

MATERIAL & METHODS

A descriptive analytical method was used in this study; the data will be collected from questionnaires Incontinence Questionnaire Nocturia (ICIQ-N), SAS, and a Demographic Data Questionnaire in Google forms that will be spread to

the subject. All the questions underwent rigorous quality control by the research team. Independent variable of this study is anxiety level, whereas the dependent variable is nocturia prevalence. Male and female undergraduate students enrolled in the nutritional science and nursing programs at Universitas Brawijaya, batches 2019, 2020, 2021, who are active will be the participant.

Data will be collected on Google Sheets, when participants submit their answer the data will be migrated to Microsoft Excel and arranged to prepare for the statistical analysis. Subsequently, data verification, scoring, coding, tabulating, data entry and cleaning were performed.

The following data analysis methods were applied:

1. Univariate analysis, presented in the form of frequency distribution in tables.
2. Bivariate analysis with Chi-Square (Either Pearson Chi-Square or Fisher-Freeman-Halton exact test), a nonparametric test, to know the correlation between the number of nocturia incidents and anxiety levels. p-value borderline of 0.05 as a significance rate.

This study obtained an approval from The Ethics Commission of Faculty of Medicine, Universitas Brawijaya, Malang, East Java, with ethics ID: No. 159/EC/KEPK–S1–PD/06/2022, granted on 24th June 2023. This ethical approval also provides informed consent that might give agreement for the respondents to participate in the research. The decision was independently decided by the respondents without any interference from the authors. The informed consent explains about the introduction, general description of the research, voluntary participation, risk and security considerations, benefits, and information confidentially. This information served to give consideration for the participant to make informed decision.

RESULTS

Table 1 shows that according to the Chi Square test, we can conclude no correlation between nocturia and anxiety level exists ($p > 0.05$).

Based on the Chi Square test results presented in Table 2, no correlation between nocturia and anxiety level exists ($p > 0.05$).

Based on the Chi Square analysis presented in Table 3, no correlation between nocturia and anxiety level exists ($p > 0.05$).

Table 1. Result of chi square assessment between nocturia and anxiety level in nursing student.

Anxiety Level	Nocturia				p
	No (52)		Yes (76)		
	n	%	n	%	
Normal	46	40	69	60	0.896
Mild moderate	6	46.2	7	53.8	
Severe	0	0	0	0	

Table 2. Result of chi square assessment between nocturia and anxiety level in nutritional studies student.

Anxiety Level	Nocturia				p
	No (70)		Yes (72)		
	n	%	n	%	
Normal	63	50.4	62	49.6	0.446
Mild moderate	7	46.7	8	53.3	
Severe	0	0	2	100	

Table 3. Result of chi square assessment between nocturia and anxiety level in nutritional science student batch 2019.

Anxiety Level	Nocturia				p
	No (11)		Yes (21)		
	n	%	n	%	
Normal	9	36	16	64	0.544
Mild moderate	2	28.6	5	71.4	
Severe	0	0	0	0	

Based on the Chi Square results presented in Table 4, no association between nocturia and anxiety level exists ($p > 0.05$).

Table 4. Result of chi square assessment between nocturia and anxiety level in nutritional science student batch 2020.

Anxiety Level	Nocturia				p
	No (43)		Yes (34)		
	n	%	n	%	
Normal	41	56.2	32	43.8	0.599
Mild/moderate	2	50	2	50	
Severe	0	0	0	0	

The Chi Square test results presented in Table 5 shows no connection between nocturia and anxiety level exists ($p > 0.05$).

Based on the Chi Square test results in Table 6, no relation between nocturia and anxiety level exists ($p > 0.05$).

Table 5. Result of chi square assessment between nocturia and anxiety level in nutritional science student batch 2021.

Anxiety Level	Nocturia				p
	No (16)		Yes (17)		
	n	%	n	%	
Normal	13	48.1	14	51.9	0.936
Mild moderate	3	75	1	25	
Severe	0	0	2	100	

Table 6. Result of chi square assessment between nocturia and anxiety level in nursing student batch 2019.

Anxiety Level	Nocturia				p
	No (14)		Yes (16)		
	n	%	n	%	
Normal	12	44.4	15	55.6	0.448
Mild moderate	2	66.7	1	33.3	
Severe	0	0	0	0	

Based on the Chi Square results presented in Table 7, no correlation between nocturia and anxiety level exists ($p > 0.05$).

Table 7. Result of chi square assessment between nocturia and anxiety level in nursing student batch 2020.

Anxiety Level	Nocturia				p
	No (19)		Yes (25)		
	n	%	n	%	
Normal	17	42.5	23	57.5	0.585
Mild moderate	2	50	2	50	
Severe	0	0	0	0	

Based on the Chi Square test results presented in Table 8, no correlation between nocturia and anxiety level exist ($p > 0.05$).

Table 8. Result of chi square assessment between nocturia and anxiety level in nursing student batch 2021.

Anxiety Level	Nocturia				p
	No (16)		Yes (17)		
	n	%	n	%	
Normal	17	35.4	31	64.6	0.648
Mild moderate	2	33.3	4	66.7	
Severe	0	0	0	0	

DISCUSSION

The study conducted by Besutet al. revealed a significant increase in the severity of nocturia in relation to worsening COVID-19 symptoms.¹² However, in this study, no questions regarding the exposure of COVID-19 were asked. In this research, no significance difference in all tests were observed, this could be attributed to the presence of other triggering factors besides anxiety. This could be proven by 240 students having a normal class of anxiety, 122 of them had nocturia. There may be additional factors influencing nocturia besides anxiety; however, bias played a big role in the respondents.

Vaccination, access to healthcare facilities, and telemedicine could also contribute to anxiety levels especially at the Faculty of Medicine Universitas Brawijaya students could be a factor that can reduce anxiety compared with early pandemic days so the output of anxiety is far from decent. A research conducted by Besut on COVID-19 and nocturia having a strong bond, and that nocturia is one of the early symptoms of COVID-19. The study proved that nocturia caused by COVID-19 is influenced by gender, age, and comorbid factors.¹³

Besutet al. conducted a similar research that indicated cardiovascular disease, hypertension, OABSS, and diabetes as factors influencing nocturia in Indonesian citizens above 40 years old. However, all of the participants are above 25 years old, this research concluded that the individual need to be above 40 years of age, best at above 70 to have a significance on the study.¹⁴ Based on the criteria of anxiety outlined in DSM V, excessive worry lasting for 6 months and difficulty concentrating during the day. Females are prone to anxiety, while nocturia is more common in males.

Anxiety was linked to moderate or severe LUTS in men (OR=3.8), as well as OAB without urine incontinence (Or=3.7). Anxiety was linked to nocturia (OR=4.2) and stress urine incontinence (OR=2.4) among women.¹⁵ The variation in data between genders is highly uneven so it is needed to have more balanced subject in terms male and female.¹⁶ Because the rates of LUTS differ between men and women, a study by Mahjani et al., 2021 also examined the qualifying articles for differential risk as a function of sex. Among the samples, the OR for clinically significant anxiety among women with LUTS was 3.14 (95% CI: 1.85,5.3, $p < .001$), and for men it was 3.52 (95% CI: 2.34,5.30, $p < .001$; Table 4).¹⁷

In conclusion, anxiety does not impact nocturia in nutritional science and nursing students of the Faculty of Health Sciences, Universitas Brawijaya, from batches 2019, 2020, and 2021. However, the study has potential limitations, such as the absence of questions related to COVID-19 exposure and the influence of other triggering factors besides anxiety on nocturia outcomes. For future studies, it is recommended to analyse additional analysis triggering factors, such as sleep disorders, amount of fluid consumed daily, depression levels, and underlying conditions that can reduce bladder capacity anatomically and functionally; standardizing subject to ensure they do not have any other triggering factors besides anxiety; increases total sample and variation to get a better result.

CONCLUSION

This study showed no correlation between anxiety levels and nocturia in students from the Nutritional Science and Nursing Science Programs at Universitas Brawijaya, batches 2019, 2020, and 2021.

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