

Prevalence of nocturia in young adolescents among preclinical, clinical, and agriculture students

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Abstract

Background: Nocturia is defined as a complaint of micturition that wakes a person up from sleep one or more times a night. Nocturia is one of the Lower Urinary Tract Symptoms (LUTS) that can be very disturbing for patients. All age ranges can experience nocturia, although the incidence is more prevalent in the elderly. The causative factors of nocturia vary widely. Several systemic diseases, hormonal imbalances, use of certain medications, and psychological conditions can play a role in the development of nocturia. **Objective:** Determine prevalence and potential influencing factors of nocturia in young adolescents. **Method:** This cross-sectional study was conducted online on students of the Preclinical, Clinical, and Agriculture students at Universitas Brawijaya, Malang, Indonesia using Google Form adapting the International Consultation on Incontinence Questionnaire Nocturia (ICIQ-N). **Results:** A total of 384 respondents were obtained. The average age of respondents was 20 years. The incidence of nocturia among 384 respondents was 53%. Female respondents experienced more nocturia (67.64%) than males. **Conclusion:** Nocturia is a common complaint among younger age groups, and is predominantly experienced by women.

Keywords: Nocturia; Prevalence; Students; Young Adolescents

1. Introduction

Nocturia is one of the most common and disturbing symptoms of Lower Urinary Tract Syndrome (LUTS) [1]. The International Continence Society (ICS) defines nocturia as waking up from sleep and urinating once or more times during the night [2]. Patients who suffer nocturia more than twice a night consider it to be quite disturbing. Nocturia is a complex and multifaceted condition [3]. Several medical conditions such as hypertension, cardiovascular disease, diabetes mellitus, stroke, obstructive sleep apnea, benign prostatic hyperplasia, and the use of certain medications such as calcium channel blockers and diuretics might potentially worsen the condition of the kidneys. Psychological factors also have a crucial role in the development of nocturia [4]. Research by Anderson *et al.* mentioned that depression and nocturia have a significant relationship [5]. Individuals who suffer from depression are more likely to experience LUTS, and this risk rises as depression symptoms get worse [6]. Anxiety and stress are also considered influential in the process of nocturia.

All age groups have an equal chance of experiencing nocturia although the prevalence of the disease increases with age. One influential factor is the reduced production of antidiuretic hormone in the elderly. However, some studies have shown that the incidence of nocturia is also quite common at a young age. Students are a group of individuals who are mostly in productive age [7]. The occurrence of nocturia in college students can have an impact on reducing sleep quality, because a person feels the need to urinate so that he wakes up from sleep. Sleep quality also decreases if the

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frequency of micturition at night becomes more frequent. This has an impact on a person's quality of life, including daytime fatigue, cognitive impairment, mood swings, increased susceptibility to disease, decreased performance, dizziness, and depression [8]. The limited data and research on the incidence of nocturia at a young age is one of the backgrounds for this study. This study aims to determine the prevalence of nocturia at a young age, especially in college students.

2. Method

This cross-sectional study was conducted on students from Preclinical, Clinical and Agriculture programs at Universitas Brawijaya. Data was collected using Google Form as a means of filling out questionnaires online. Respondents who actively attended lectures and filled out the questionnaire completely were the inclusion criteria in this study. Respondents who were on leave from college, using diuretic and antidepressant drugs, currently experiencing urinary tract infections, experiencing systemic diseases, such as hypertension and diabetes mellitus were excluded from this study. The International Consultation on Incontinence Questionnaire Nocturia (ICIQ-N) was used to ascertain the incidence of nocturia. The questionnaire was divided into three sections: a consent statement to participate in research, information on respondent characteristics such as name, class year, and gender, as well as past medical history and drug use.

3. Results

A total of 384 students from Preclinical, Clinical, and Agriculture programs at Universitas Brawijaya participated in the survey. Of these, 90 were enrolled in the Preclinical Program, 78 were in the Clinical Program, and 216 were in the Agriculture Program. Of the respondents, there were 272 females (71%), and 112 males (29%). The average age of respondents was 20 years. More than half of the respondents experienced nocturia (53%). Nocturia experienced by male respondents as many as 66 people (32%), while 138 (68%) female respondents experienced nocturia.

Table 1 Respondents characteristics

| Study Programs | Respondents (n) | Gender | | | | Age | | | |
|----------------|-----------------|-----------|----|-----------|----|------------|----|------------|-----|
| | | Male | | Female | | < 20 years | | ≥ 20 years | |
| | | n | % | n | % | n | % | n | % |
| Preclinical | 90 | 45 | 50 | 45 | 50 | 45 | 50 | 45 | 50 |
| Clinical | 78 | 31 | 40 | 47 | 60 | 0 | 0 | 78 | 100 |
| Agriculture | 216 | 36 | 17 | 180 | 83 | 168 | 78 | 48 | 22 |
| Total | 384 | 112 (29%) | | 272 (71%) | | 213 (55%) | | 171 (45%) | |

Table 2 Characteristics of respondents experiencing nocturia

| Nocturia | | | | | | | |
|-----------|----|-----------|----|----------|----|-----------|----|
| Yes | | No | | Male | | Female | |
| n | % | n | % | n | % | n | % |
| 35 | 39 | 55 | 61 | 19 | 54 | 16 | 46 |
| 39 | 50 | 39 | 50 | 23 | 59 | 16 | 41 |
| 130 | 60 | 86 | 40 | 24 | 18 | 106 | 82 |
| 204 (53%) | | 180 (47%) | | 66 (32%) | | 138 (68%) | |

4. Discussion

384 students from Preclinical, Clinical, and Agriculture students at Universitas Brawijaya participated as respondents. As people age, nocturia becomes more common. Nevertheless, this does not rule out the chance that nocturia can also occur in younger people, with potentially distinct etiological causes.

Young adults are an age group where nocturia is not uncommon. The sample for this study was drawn from university students, the most of whom are young adults with an average age of 20 years old. The incidence of nocturia in the respondents of this study was quite large, as much as 53%, which shows that young people also often complain of nocturia. In a study by Sarici *et al.* showed the results that the age of 20-30 years was the age group that experienced the second most nocturia, which amounted to 21% [9]. Nocturia was a frequent complaint experienced by female respondents in this study. More than half of the female respondents in this study experienced nocturia (53%). This is in line with research by Liew *et al.*, where as many as 58% of female respondents complained of nocturia [10]. Factors that play a role in the incidence of nocturia in women include hormonal factors, parity, and history of gynaecological surgery [11]. The incidence of nocturia in women appears to be significantly influenced by psychological variables as well. Those who experience high levels of psychological stress, anxiety, or despair may be more susceptible to LUTS [12]. According to Steel *et al.*, women are more likely to suffer from anxiety and mood disorders, compared to males [13]. A 2013 study by Breyer *et al* revealed that nocturia sufferers also reported psychological illnesses such anxiety and sadness.

Agriculture students were the group of respondents who experienced the most nocturia compared to the other two study programs. The fact that more respondents from the agriculture study program responded than from other study programs may be the reason behind this. The number of clinical students experiencing nocturia is more than that of preclinical students. In a study conducted by Rosalina and Siswati, it was shown that medical professional students have higher stress levels than medical education students, due to higher learning activities and workload [14].

Nocturia that occurs at a young age, which is a productive age group, will have an impact on the quality of life [15]. As a consequence of nocturia, sleep disturbances, mood changes, and decreased quality of life may occur in young adults. Therefore, it is necessary to know the factors that influence the occurrence of nocturia at a young age, in order to make appropriate interventions, in the hope that it will reduce the frequency of occurrence of nocturia and indirectly improve productivity and quality of life.

5. Conclusion

Nocturia is a complaint that is often experienced by younger age groups, and the majority is experienced by women. However, it should be noted that the distribution of gender in this study was not homogeneous, where the majority of respondents were female, so this could be a bias. Furthermore, it was not possible to demonstrate statistically significant variations in the incidence of nocturia according to age since the respondents' age range was too narrow. Further research is needed to determine the factors that cause the occurrence of nocturia at a young age compared to the elderly.

Compliance with ethical standards

Disclosure of conflict of interest

The authors declare that they have no competing interests.

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

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