

# Nocturia Overview: a survey from General Practitioners in Indonesia



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## ABSTRACT

**Background:** Nocturia is the need or the number of waking up at night to urinate, with each void preceded and followed by sleep. It is included in lower urinary tract symptoms and reported as the most bothersome and common. Nocturia causes long term sleep deprivation and lowers someone's quality of life. Thus, they need to know how to diagnose and treat nocturia, including time to refer to a specialist. This study aims to review the management and diagnosis of nocturia among Indonesian general practitioners.

**Methods:** This study used cross sectional design. The data was collected by distributing a self-made online survey with Google Forms about the overview of nocturia among general practitioners in Indonesia, taken from October 2021 to March 2022. Data were analyzed using SPSS version 20.0 for Windows.

**Results:** There were 252 participants in this study that filled in the questionnaire from October 2021 to March 2022. Most patients (57.8%) were between 50 and 65 years old. Different approaches for nocturia were made, with mainly chose education and lifestyle change (88.1%) and medication such as alpha blocker (19.8%) compared to desmopressin (13.5%). Only 65.5% of respondents referred their patients to urologists for further therapy.

**Conclusion:** General practitioners in Indonesia face difficulty in dealing with nocturia. It is better to refer these patients to a urologist or other related specialist after they perform the diagnostic examinations and standard therapy.

**Keywords:** general practitioner, nocturia.

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## INTRODUCTION

In general, most people can sleep for 6-8 hours without interruption or awakened to urinate. It is due to higher urine concentration, higher antidiuretic hormone (ADH), and smaller urine output at night. However, if this condition is not achieved, the person can awaken several to urinate excessively at night. This condition is called nocturia. Nocturia is the need or the number of waking up at night to urinate, with each void preceded and followed by sleep. It is included in lower urinary tract symptoms (LUTS) and reported as the most bothersome and common. Nocturia causes long term sleep deprivation and lowers someone's quality of life. It leads to decrease work performance, difficulty sustaining focus, and mood changes.<sup>1,2</sup>

Nocturia commonly occurs in the elderly, and the chance increases with age. The prevalence is more than 50% in the population above 50 years old, rising to 70% for the age group 70-80. It affects both

males and females. In particular, older adults with nocturia who make multiple nocturnal trips to the bathroom are at a substantially increased risk of potentially serious falls. Someone with nocturia usually has an underlying condition. There is different pathophysiology for nocturia, such as cardiovascular disease, nephrological disorder, and pharmacological effects.<sup>3</sup> Though the prevalence of nocturia is high, the symptoms of it are still underdiagnosed. Nocturia also does not have specific guidelines. It is usually treated as overactive bladder (OAB) in women or prostate problems in men and included in benign prostate obstruction (BPO) or OAB guidelines. Treatment includes behavior changes, treating the underlying disease, and taking medication.<sup>3,4</sup>

Nocturia is commonly found in primary health care, especially by general practitioners. Thus, they need to know how to diagnose and treat nocturia, including time to refer to a specialist. Based on those

mentioned above, this study aims to review the management and diagnosis of nocturia among Indonesian general practitioners.

## METHODS

This study used cross sectional design. We collected the data by distributing a self-made online survey with Google Forms about the overview of nocturia among general practitioners in Indonesia, taken from October 2021 to March 2022. The questionnaire we made had no potential risk of bias, and we also refer to a previous study by Rahardjo HE et al. that used a similar questionnaire for urologists.<sup>3</sup> We sent the link to general practitioners in Indonesia and asked them to distribute it to their peers through social media and professional groups and meetings. Subjects filled in the questionnaire and the data was assessed to see the diagnosis and management of nocturia in Indonesia.

The questionnaire consisted of 15 questions, consisting of general personal

information of the respondents such as place of work and the characteristic of nocturia patients, diagnostic modalities used, and management approach for nocturia patients. The primary outcome measure was the data about the management of nocturia by a general practitioner. The secondary outcomes were data about diagnostic modalities for nocturia used by GP and the demographic of nocturia patients encountered by general practitioners. The sample was taken by purposive sampling. The inclusion criteria were general practitioners in Indonesia that work in primary health care. The exclusion criteria were those who did not want to be included in the study. Ethics for this study is accepted by the institutional review board with the ethical clearance number KET-1138/UN2.F1/ETIK/PPM.00.02/2021. We used no statistical analysis software because we presented the data descriptively. Data were analyzed using SPSS version 20.0 for Windows.

## RESULTS

There were 252 participants in this study that filled in the questionnaire from October 2021 to March 2022. Most respondents were between 25-29 years (32.9%), followed by the age group of 30-39 years old (25%). Forty-eight participants were aged between 50-60 years old, and it can be seen in **Table 1** that 32.5% of participants had already worked as general practitioners for more than 10 years. We divided the age with 5 years range to make it easier to group because the number was ranged. Only a small number of respondents worked in private teaching hospitals (3.6%) or private clinics (3.2%), with mainly working in government non-teaching hospitals (16.7%). Since we distributed it to all general practitioners in Indonesia, we found that most respondents were from outside Java (40.1%), though Java is the most populated island in Indonesia.

We then asked about nocturia cases they encountered as general practitioners. Around 77.8% of respondents came across nocturia patients between 1-5 times, and 15.9% were for 6-10 times per month. Usually, the patients were between 50-65 years old (57.9%) or older. Male patients were more common than female (65.5%

**Table 1. Demographic data of the respondent**

Variable	n (%)
Age (years)	
• 20-25	27 (10.70)
• 26-29	82 (32.90)
• 30-39	63 (25.00)
• 40-49	31 (12.30)
• 50-60	48 (19.00)
Length of working as General Practitioner (years)	
• <1	36 (14.30)
• 1-2	57 (22.60)
• 3-4	37 (14.70)
• 5-10	40 (15.90)
• >10	82 (32.50)
Type of workplace	
• Government teaching hospital	41 (16.30)
• Government non-teaching hospital	42 (16.70)
• Teaching private hospital	9 (3.60)
• Private non-teaching hospital	66 (26.20)
• Clinic	58 (23.00)
• Public health center	28 (11.10)
• Private clinic	8 (3.20)

**Table 2. Characteristics of Nocturia Patients**

Variable	n (%)
Number of nocturia cases (per month)	
• 1-5	196 (77.80)
• 6-10	40 (50.90)
• 11-20	9 (3.60)
• >20	7 (2.80)
Patient age group (years) most frequently meet	
• <18	11 (4.40)
• 18-30	10 (4.00)
• 30-49	26 (10.30)
• 50-65	146 (57.90)
• >65	59 (23.40)
Patient gender most frequently meet	
• Woman	44 (17.50)
• Man	165 (65.50)
• An equal number of men and woman	43 (17.10)
Duration of the most common nocturia symptoms	
• <2 weeks	76 (30.20)
• 2-4 weeks	83 (32.90)
• 1-3 months	63 (25.00)
• 3 months	13 (5.20)
• 6 months	17 (6.70)
Most common nocturia symptoms	
• Only nocturia	46 (18.30)
• Nocturia and voiding symptoms	118 (46.80)
• Nocturia and storage symptoms	55 (21.80)
• An equal amount of nocturia + voiding and nocturia + storage symptoms	33 (13.10)

vs. 17.5%), and they usually suffered from nocturia for 2-4 weeks (32.9%) or even 1-3 months (25%) before coming to the doctor. In their experiences, nocturia accompanied by voiding symptoms such

as weak stream and intermittent urine were more common, seen in 46.8% of their patients, as seen in **Table 2**.

We analyzed the modalities used to diagnose nocturia among general

practitioners. We allowed them to choose more than one answer. Almost all of them did history taking (98.8%) and physical examination (86.5%) for the patients first, before another examination. Bladder diaries were given to patients (73%), with 95.7% using manual bladder diaries. The most common scoring system for nocturia was the International Prostate Symptom Score (IPSS) (59.6%), though 37.7% of respondents did not use any scoring system. Urinalysis and blood glucose tests were done by 52% and 50.4% of respondents, respectively. Of the 137 respondents who did the PVR examination, 48.1% used ultrasonography (USG). A urodynamic study was only done by 4.8% of respondents. Other examinations, such as examinations to check diabetes insipidus (9.5%), cardiac problems (11.5%), or sleep disorders (6%), were also becoming options. One hundred sixteen respondents (46%) referred these patients to another specialist, such as a urologist, as seen in [Table 3](#).

Different approaches for treating nocturia were also surveyed, and they chose multiple options. Education and lifestyle changes were the main approach for 88.1% of respondents. For medication, many respondents offered the patients to use an alpha blocker (19.8%) or antimuscarinic (18.7%). However, most also referred the patients to a urologist or another specialist (65.5%). Mostly, they asked the patients to return for follow-up after a week (42.9%) or 2 weeks (27.4%), as seen in [Table 4](#).

## DISCUSSION

According to the International Continence Society (ICS) 2018 definition, nocturia is a common and irritating medical disorder defined by the need to wake up to pass urine throughout the major sleep phase, with each urination followed by sleep or the intention to sleep. Waking up two or more times each night to void can also be deemed a clinically relevant definition. Based on our findings, nocturia is not an uncommon finding. With most of the respondents in our study outside Java, the most populated island in Indonesia, with different types of hospitals, our study can include many areas in Indonesia. Nocturia can impact people of all ages, though

**Table 3. Modalities for diagnosing nocturia**

Variable	n (%)
History taking	249 (98.80)
Physical examination	218 (86.50)
Bladder diary	
• Yes	184 (73.00)
○ Manual	176 (95.70)
○ Electronic	8 (4.30)
• No bladder diary	68 (27.00)
Scoring system	
• Yes	157 (62.30)
○ OABSS	50 (29.20)
○ IPSS	102 (59.60)
○ ICIQ-N	5 (2.90)
• No scoring system	95 (37.70)
Kidney function examination	97 (38.50)
Urinalysis	131 (52.00)
Blood glucose test	127 (50.40)
Uroflowmetry	32 (12.70)
Post-void residual urine	
• Yes	137 (54.40)
• USG	77 (48.10)
• Catheter	60 (37.50)
• None	95 (45.60)
Ultrasound	69 (27.40)
Urodynamic study	12 (4.80)
Diabetes insipidus examination	24 (9.50)
Cardiology examination	29 (11.50)
Sleep disorder examination	15 (6.00)

**Table 4. Management approaches for nocturia**

Variable	n (%)
Education and lifestyle change	222 (88.10)
Desmopressin	34 (13.50)
Antimuscarinic	47 (18.70)
Antidiuretic	27 (10.70)
Sleeping medicine	15 (6.00)
Beta-3-agonist	22 (8.70)
Imipramine	9 (3.60)
Alpha blocker	50 (19.80)
Refer to psychiatrist	18 (7.10)
Refer to a urologist or another specialist	165 (65.50)
Follow up period	
• 1 week	108 (42.90)
• 2 week	69 (27.40)
• 3 week	66 (26.20)
• 4 week	9 (3.60)

the incidence increases with age. In our study, nocturia is more common in men, especially elders above 50. This is similar to the longitudinal study done by Van Kerrebroeck P et al., which revealed that the prevalence of nocturia increases over time and with age among men aged 50 to 78 years.<sup>5</sup> Another study by Zumurbas AE et al. showed that gender substantially

impacts nocturia prevalence, with women having a higher frequency among young adults. Still, men have a higher prevalence among the elderly.<sup>6</sup> Nocturia in the elderly can be multifactorial. Deregulation of arginine vasopressin level, sleep disturbances, and comorbidities such as diabetes mellitus can decrease or lose bladder function, resulting in high PVR.<sup>7</sup>

In men, benign prostatic hyperplasia is seen in 80% of patients caused by compression of the urethra.<sup>8</sup>

Most patients came to the doctor after having the symptoms for around a month or less. This treatment-seeking behavior might cause low awareness that nocturia is a medical condition. Treatment-seeking behavior for LUTS is linked to symptom severity and degree of bothersome. In our findings, the most common nocturia symptom general practitioners face is nocturia, accompanied by voiding symptoms. As nocturia is considered circadian dysfunction, the physiologic function of voiding is also disrupted.<sup>9</sup>

For diagnostic techniques, almost all general practitioners considered history and physical examination, as in alignment with existing standards, that for every diagnosis, a history and physical examination are recommended. As ICS recommends, a bladder diary is needed to diagnose nocturia patients before treatment. In our study, not all respondents gave their patient's bladder diaries. This might be because it is time-consuming, unenterprising to the patients, and lacks physician competence. This diary can be used to quantify the number of voids, and it is suggested that the diary should be kept for three days. It indicates the need for an initiative in applying the current guideline for using bladder diaries and performing urinalysis among general physicians. Tests for renal function and urinalysis can be used to see the amount of sodium and urea. It can also rule out any infection or diabetes<sup>10</sup> Though not all the GP perform a urinalysis. This could have been attributable to Indonesia's inadequate facilities distribution of laboratories facilities. Based on the European Association of Urology (EAU) Guidelines, a symptom score should be used to determine the intensity and bother of individual LUTS; however, many general practitioners in Indonesia did not use a scoring system. Most of them who applied for the scoring system were using IPSS. This is understandable since most of the patients are elderly men hence the high risk of having prostate problems.<sup>11</sup>

Nocturia, as mentioned before, can be caused by comorbidities such as

cardiovascular problems or metabolic problems. Hence, checking blood glucose and examination of cardiovascular function is needed, which is also done by general practitioners in Indonesia.<sup>10</sup> Though nocturia is one of the LUTS, only simple urinary tract infection and simple pyelonephritis can be handled by general practitioners in Indonesia; thus, referring the patient to a specialistic is one of the common options chosen by respondents after doing a simple examination for diagnosing nocturia and its etiology.

Most general practitioners chose education and lifestyle change as one of the main treatments for nocturia. Dietary changes, weight loss and physical activity are all examples of lifestyle interventions that can be applied for patients aimed at the etiology of the disease. Limiting fluid intake and changing the type of fluid is advised in most LUTS guidelines. Bladder training and pelvic floor training can improve nocturia. Several drugs used in LUTS/BPH medication have shown effects on nocturia. Alpha blocker is chosen by most general practitioners for treating nocturia, followed by antimuscarinic. Alpha blocker is considered to reduce residual urine and so increase room for nocturnal urine storage.<sup>12-14</sup> Most studies on antimuscarinics have been conducted in the context of OAB management. Because nocturia is commonly seen in OAB, it has been assumed that first-line medications for OAB will exert a clinically significant and somewhat positive impact in reducing the number of nocturia episodes for patients without OAB symptoms.<sup>15</sup> Desmopressin is the primary choice for nocturnal polyuria caused by reduced nocturnal vasopressin, though not many general practitioners use it. The use of desmopressin in clinical settings is still uncommon because lack of standardized desmopressin doses and hyponatremia as its side effect, which can be life-threatening in the elderly.<sup>15,16</sup> Most general practitioners refer this patient to a urologist or other specialist since they feel nocturia is outside the scope of their competence. The limitation of this study is the small number of participants since we only had 252 participants compared to thousands of general practitioners in Indonesia. We also did not do any

statistical analysis, only a descriptive study. For further study, we recommend having a bigger sample size, and in addition, further analytical study is needed.

## CONCLUSION

General practitioners in Indonesia face difficulty in dealing with nocturia. Though the diagnostic modalities align with the guideline for diagnosing nocturia, only 52% and 73% of general practitioners used urinalysis and bladder diaries, respectively. Even though desmopressin is the sole evidence-based medication for nocturia, it was administered less frequently than other medicines. It highlights prospective necessities to create awareness about nocturia and encourage Indonesia general physicians to implement the current guideline, such as using a bladder diary and performing urinalysis as the diagnostic tools, and also prescribing desmopressin as the initial management for nocturia before referring the patients to a urologist.

## CONFLICT OF INTEREST

The authors declare that the research was conducted without any commercial or financial relationships that could be construed as a potential conflict of interest.

## ETHICAL CONSIDERATIONS

This research was conducted based on the ethical conduct of research from the Ethics Committee of the Medical Faculty, Universitas Indonesia, Jakarta.

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## AUTHOR CONTRIBUTION

All authors contributed to the study from the conceptual framework, data gathering, and analysis until the study's results were interpreted upon publication.

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