

# The Impact of Nocturia on Quality of Life – The Role of Questionnaires in the Management of LUTS

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## Abstract

**Introduction and Objectives.** Nocturia is a symptom, which affects the population regardless of gender and age. In order to establish a diagnosis is necessary to have a detailed history of the patient and to have a voiding diary. The aim of this study was to draw the attention of the population and general practitioners to this symptom, respectively to investigate its impact on quality of life by using a questionnaire.

**Materials and Methods.** A prospective study was conducted at an Ambulatory Urology Ward in Târgu Mures, based on questionnaires, containing 21 questions, completed by patients who presented for consultations, over a period of five months. Completion of the questionnaire was voluntary and anonymous.

**Results.** A total of 69 patients completed the questionnaires, from them 59 (85.50%) presented nocturia. The occurrence of nocturia around male patients is more frequent (72.88% vs. 27.11%). It increases with age ( $p < 0.0001$ ,  $r = 0.431$ ). Out of 59 people, 16 (27.11%) responded that nocturia does not bother them at all, only 15 patients (25.42%) find this symptom quite disturbing and state that sleep duration and quality are affected, respectively it has a negative effect on quality of life. Of the 59 patients with nocturia, only 12 (20.33%) presented themselves with nocturia as the main problem.

**Conclusions.** Nocturia affects a large part of the population regardless of sex and age, having a negative effect on the quality of life and sleep. It is a plurietiopathogenic symptom, and the early diagnosis and contribution of several specialists has an important significance in choosing the appropriate and individualized treatment.

**Key-words:** LUTS, nocturia, quality of life, questionnaires

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*Author contributions:* E. Drágus performed the statistical calculations, analysed the results and drafted the article;  
D. Porav-Hodade contributed to the study design and performed writing correction;  
R.L. Fülöp realized the database; O. Mártha guidance of the research.

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## Introduction and Objectives

According to ICS (International Continence Society) the definition of nocturia: walking to pass urine in the main sleeping period. The first nocturia episode must be preceded by sleep<sup>[1]</sup>. As far as the prevalence of nocturia is concerned, it affects the population regardless of age and gender, however it shows a tendency to increase with aging<sup>[1]</sup>. Of the young population between 2-18% suffer from nocturia, mostly women, furthermore among the elderly (> 70 years) this percentage is 28-62%, and it appears more frequently in men. Almost half of Europeans over 50 years are affected by nocturia<sup>[2]</sup>. The prevalence of nocturia increases directly in proportion with the increase of BMI (body mass index)<sup>[3]</sup>. Etiology is multifactorial from urological disorders which are most common, to cardiac, diabetic and neurological causes, respectively it can appear as a side effect of a drug<sup>[4]</sup>. Among people who suffer from nocturia, we often find other pathologies, such as type 2 diabetes, high blood pressure and other cardiovascular pathologies<sup>[3, 4, 5, 6]</sup>. By using questionnaires such as ICS-male<sup>[7]</sup>, DAN-PSS<sup>[8]</sup> or BFLUTS<sup>[9]</sup> we can identify nocturia and its impact on life quality. In order to establish a diagnosis of nocturia and to determine the etiology of the disease, it is necessary to have a voiding diary. This gives the attending physician a complete picture of the patient's health problem. The use of a micturition diary is the easiest way to determine the additional diagnostic steps and to decide the appropriate treatment. The voiding diary must be completed for at least 3 days<sup>[10, 11]</sup>. The patient is required to indicate fluid intake for 24 hours, the exact time of ingestion, and also the frequency and amount of urination<sup>[5]</sup>. It is also useful to register the drugs used by the patient [10, 12]. With these diaries we obtain important information about the mechanism of nocturia, thus we can exclude many pathologies and after the positive diagnosis we can administer the appropriate treatment<sup>[5, 11, 13]</sup>. Nocturia affects the quality of life of patients who have to wake up several times during the night to urinate, thus having a negative effect on sleep, but also on performance during the day. This increases the morbidity and mortality rate. An American study<sup>[14]</sup> found that 53% of people between the ages of 55 and 84, interrupt their normal sleep cycle by waking up at least once a night to urinate, which is repeated daily (every night). It is obvious that once the normal cycle of sleep is interrupted, insomnia can appear and the quality of sleeping will diminish. In these persons, the disorders of disposition, the decrease of the psychomotor activity, and the lack of attention are

most frequently encountered<sup>[5, 6, 14, 15]</sup>. Nocturia affects the quality of life of patients, as well as their partners and it seems to be a neglected symptom from both the patients and healthcare professionals point of view. We considered it important to study nocturia in patients with urological disorders. The aim of this research is to draw the attention of the population to this symptom, to determine the prevalence of nocturia, respectively to define the possible causes of this symptom, and it has an impact on quality of life, because only targeted therapy can relieve this symptom.

## Materials and Methods

This is a prospective study, which is based on questionnaires, completed by patients at our Ambulatory Urology Ward in Târgu Mureș, over a period of five months (between 07.2017-09.2017 and 05.2018-06.2018). The questionnaire has two parts: the first part is completed by the patients and the second part by the physician. The questionnaire contains a total of 21 questions, including general patient data (gender, age, environment of origin), followed by questions about the nocturia: How many times do patients have to urinate during the night? How much does this bother them? Have they consulted a doctor about this problem and if so, from which specialty? Have they received symptomatic treatment? There are a number of questions about urological comorbidities: benign prostatic hyperplasia, overactive bladder, problems with storage or removal of urine, respectively cardiac comorbidities and if the patient has completed or not a bladder diary? The last four questions are addressed to the attending physician: To what kind of specialty has the patient presented? What issues did the patient present? Anamnestic data regarding known and treated pathologies, the medication used. Completion of the questionnaire was voluntary and anonymous, after the informed consent was signed. This prospective and observational study was conducted on a batch of 69 people. Data was collected and processed using Microsoft Office Excel and GraphPad Prism 7. A p value < 0.05 was considered statistically significant, with 95% confidence interval.

## Results

A total of 69 people participated in filling out the questionnaires. From the respondents, 59 patients (85.50%) experienced symptoms of nocturia. The mean age of those with a symptom of nocturia is 64 years (between 27-89 years). The distribution of nocturia between genders shows a rate of 72.88% (43 people) in favor of

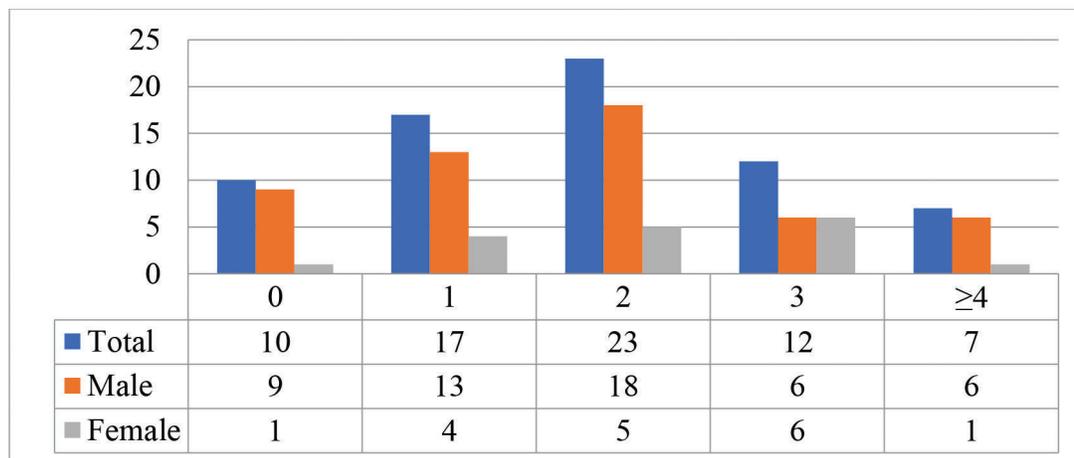


Figure 1 - Prevalence of nocturia by gender

men and 27.1% (16 persons) in favor of women, with a mean age of 65 years and 62 years respectively. (Figure 1)

The following diagrams show the distribution of nocturia according to age ranges. Concerning the age, we noticed that nocturia becomes more frequent and more accentuated ( $p < 0.0001$ ,  $r = 0.431$ ).

To the question „How disturbing is urination at night?” The patients responded on a scale of one to ten, where one meant „ does not bother at all” and ten „ it disturbs a lot”. Out of 59 people, 16 (27.11%) responded that nocturia does not bother at all, 28 (47.45%) gave a calification between two and five and only 15 people (25.42%) find this symptom quite disturbing and state that sleep duration and quality are affected, respectively

From the 34 patients, one get some advice to change his lifestyle, three of them recieved healthy lifestyle advice and pharmaceutical treatment, three underwent surgery treatment and ten patients get pharmaceutical treatment for reaveling the symptoms. Of 52 men, 27 (51.92%) suffered from BPH (benign prostatic hyperplasia) and 43 (82.69%) presented symptoms of nocturia. In the cases of 27 (51.92%) patients both pathologies were present. Nocturia is present in a significantly increased proportion ( $p = 0.029$ ) in patients with BPH. Overactive bladder (OAB) has no significant relationship to nocturia ( $p = 0.17$ ).

Of the 59 patients with nocturia, only 12 (20.33%) presented themselves with nocturia as the main problem. (Figure 3)

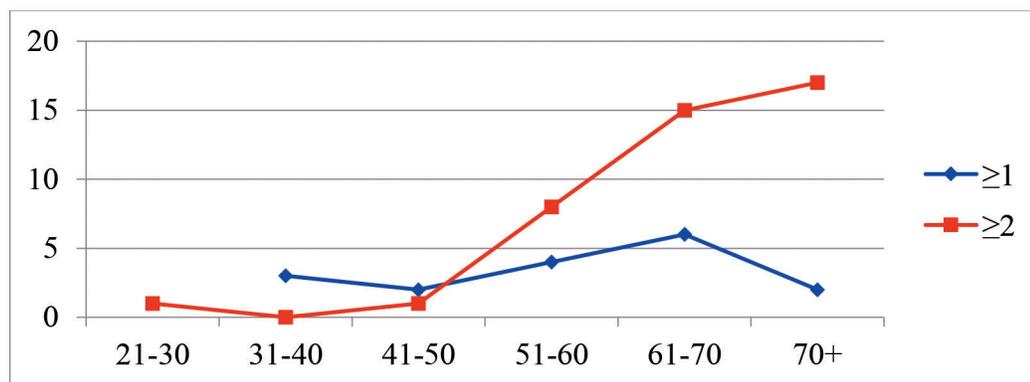


Figure 2 - Prevalence of nocturia by age

it has a negative effect on quality of life. Of those who have chosen a grade over six, nocturia appeared more than three times during the night and it was associated with urge. Approximately half of those with nocturia symptoms (34 people – 57.62%) have been approached with this problem by a specialist. Most of them (85.29%) presented themselves at an urology clinic. Of those who have approached a physician, 50% (17 patients) said that they did not receive any help to improve the symptoms.

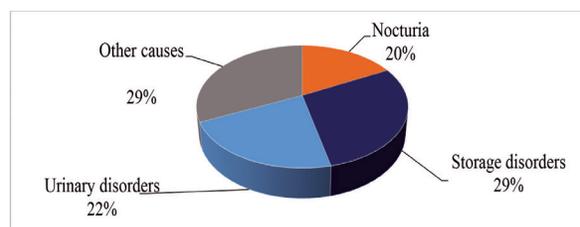


Figure 3 - Distribution according to cause of presentation to physician

Regarding the LUTS, 32 (46.37%) patients complained of urgency, 12 (17.39%) of urinary incontinence, six patients (8.69%) of unintentional discharge of urine or dripping. Concerning the voiding symptoms our results were the following: 13 dysuria (18.84%), ten patients (14.49%) weakening of the urine stream, three (4.34%) where urination could only be started by pressing and three (4.34%) with complete retention. Regarding the associated pathologies of the patients, the most common are cardiovascular diseases (32 cases, 46.37%), followed by BPH (27 cases, 51.92%) and diabetes (ten patients, 14.49%). From the patients with cardiovascular disease, 29 have nocturia (90.62%), whereas among the 10 diabetics 9 (90%) suffers from this symptom, but there is no statistically significant association between them ( $p_1 = 0.66$ ;  $p_2 = 0.26$ ).

### Discussions

The prevalence of nocturia among those questioned is 85.50%, mean age is 64 years. Data from the literature shows a lower values of the prevalence of nocturia (40%-60%) and an average age of 56 years<sup>[16]</sup>, in our study, mean age is higher (64 and 62) among these patients, but the result has no statistical significance ( $p=0.75$ ). The prevalence so high compared to literature data is the consequence of a small batch, the questionnaires were completed only at one urologic ward, where patients with urinary problems are present, respectively the elderly population dominates. The prevalence of nocturia increases significantly with age and this is also reflected in our study<sup>[16]</sup>. Of those asked, 27.11% (16 patients) said they did not feel disturbed by the fact that they need to wake up at night to urinate. The explanation is that these people believe that the symptoms are a consequence of a physiological phenomenon and aging. Nearly half (47.45%, 28 patients) of those with nocturia underestimate the unpleasant symptom and scored between two and five. Most of these patients wake up at night only once or twice to urinate.

Of those who have a higher grade (over six), all suffer from nocturia and wake up three or more times a night for the urge to urinate. Only three people said that awakening from sleep to urine is a very disturbing symptom (grade ten). Both men and women find nocturia just as disturbing. A study conducted in the UK targeting men over 40, states that the prevalence of nocturia has a rate of 14%, of which the proportion of those who perceive this symptom as a problem reaches a rate of 67%. This value is similar to the one registered for women, where the incidence rate of the night

is 18%, and of the affected patients 63% consider this condition as disturbing<sup>[17]</sup>.

An observational study<sup>[18]</sup> shows that nocturnal symptoms are more unpleasant in the population than the lower urinary symptoms that occur during the day. Patients diagnosed with nocturia feel „always” or „often” tired, respectively fatigue occurs more often than in those affected only with daytime symptoms. The cause of fatigue is inadequate sleep, which involves waking up several times during the night, few hours of sleep, difficulties in returning to sleep after visiting the toilet compartment. People diagnosed with nocturia feel significantly more affected than people with any other low urinary symptoms during the day ( $p < 0.001$ )<sup>[18]</sup>. The most common causes are urological, namely BPH and OAB. Of 59 patients 27 suffered from nocturia due to prostatic hyperplasia ( $p=0.029$ ). In the appearance of nocturia, patients' associated different pathologies, or their medication could play an important role in this case, however, in our study we have not been able to prove causality with significant data. Because it has a wide variety of etiology, treatment options vary also from lifestyle changes to medical treatment, but also surgical treatment and not only in the field of urology. Due to the multifactorial origin of nocturia, it is unlikely that conventional treatments for benign prostatic hyperplasia and hyperactive bladder will be particularly effective. Despite the fact that in both pathologies the nocturia is present, these therapeutic options have not been shown to be effective in ameliorating nocturnal urinary dysfunction. In the study carried out by Krimpen<sup>[19]</sup>, 1142 male people with no history of radical prostatectomy, transurethral resections, bladder tumor or prostate tumor were evaluated. The men completed a questionnaire with 113 questions about their pathological background and behavioral habits, respectively the I-PSS (International Prostate Symptoms Score) questionnaire. Furthermore they underwent a medical examination and have completed a micturition diary. Patients were re-evaluated after two, four and six years. The data were evaluated and the study showed that low urinary tract symptoms (LUTS), 24-hour polyuria and nocturnal polyuria are associated with the increased prevalence of nocturia in older men. As such a lower emptying volume, nocturnal polyuria and 24-hour polyuria, respectively low urinary charges are significant and potentially modifiable determinants of nocturia. A two-step etiological process may be indicated in the case of nocturnal polyuria, because of the observation that both definitions of nocturnal polyuria

are significant independent determinants. Cross-sectional studies confirmed four major causes of nocturia, namely, sleep disturbances, decreased bladder capacity, polyuria and nocturnal polyuria. Although according to the cross-sectional studies, nocturia is associated with several conditions, according to longitudinal studies only age, the lower volume emptied, polyuria and nocturnal polyuria are associated with nocturia<sup>[19]</sup>.

Nocturia is a neglected symptom, because only half (57.62%) of those who suffer from this problem contact a physician. Almost for all patients the first option for solving these problems is represented by the urologist (85.29%). It is also a neglected symptom on the part of the medical staff, because half of the respondents said they did not receive any help for their problem. This aspect is also illustrated by the fact that only 20.33% of the people with symptoms of nocturia presented themselves to the physician.

Abrams and his colleagues<sup>[20]</sup> developed a questionnaire (INTU-International Nighttime Urination) with ten questions, which aims to assess the impact of nocturia ( $\geq 2$  urination / night) on quality of life and health in both genders. All participants (n=28) reported fatigue over time during the day due to the nocturnal interruption of sleep, respectively the associated consequences, difficulties in concentration and irritability during the day were present. They also revealed difficulties in the process of returning to sleep as a result of waking up at night, respectively the people started the day earlier than they wanted because of their urination needs<sup>[20]</sup>.

This study has some limitations, such as the low number of participants in completing the questionnaires, namely the use of a single type of questionnaire.

## Conclusions

Nocturia is a symptom and not a disease in itself, which affects many people regardless of age and sex. Prevalence has a tendency to increase with age, and the symptoms become more and more significant. In determining the cases, the questionnaires and the 72-hour micturition diary can help us. Nocturia affects the quality of life by affecting the sleeping process, and last but not least daily performance, however, it is a neglected symptom on the part of both patients and healthcare professionals. Treatment should be individualized according to the etiology and degree of patient involvement. In the future, more attention should be paid from the general practitioners, to recognize and identify this symptomatology. Questionnaires are needed to objectivise the symptomatology and to state its impact on quality of life.

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