

# Treatment patterns for lower urinary tract symptoms and overactive bladder in an Eastern European country: a nationwide population-representative survey

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**Introduction** The aim of this study was to establish at the population level the treatment patterns for lower urinary tract symptoms (LUTS) and overactive bladder (OAB) in Poland.

**Material and methods** We used data from LUTS POLAND, a survey representative of the entire Polish population classified by age, sex, and place of residence. The treatment patterns we considered were lifestyle changes, physiotherapy, non-prescription drugs, prescription drugs, and surgical treatment.

**Results** We obtained 6,005 completed interviews. About one-third of respondents who reported LUTS or OAB were seeking treatment, and many of these persons received treatment. Men were more proactive in seeking treatment than women, and men more often received treatment. Management with prescription drugs was the most common treatment modality of LUTS and OAB respondents. There were some disparities in distribution of other treatment options between LUTS and OAB persons, but, disappointingly, non-invasive and low-cost management strategies were rarely reported as being used. Specialists (mainly urologists) provided most of the treatments. We did not identify differences between urban and rural areas in treatment seeking, treatment receiving, and the treatment methods that were used.

**Conclusions** In Poland, the scale was low for seeking treatment for LUTS and OAB. As well, there was little reliance on non-invasive and low-cost management strategies for LUTS and OAB. Our findings underline the need for education of patients and physicians about LUTS and OAB, and for greater healthcare and financial resources for LUTS and OAB patients.

**Key Words:** Poland ↔ lower urinary tract symptoms ↔ overactive bladder ↔ treatment  
↔ pharmacotherapy ↔ physiotherapy ↔ surgery

## INTRODUCTION

Lower urinary tract symptoms (LUTS) include storage, voiding, and post-micturition symptoms. Overactive bladder (OAB) is a subgroup of storage symptoms composed of urgency, frequency, urgency urinary incontinence, and nocturia [1].

A group of large population-based analyses found that LUTS and OAB were highly prevalent and associated with a reduced health-related quality of life [2]. In a recent nationwide, population-representative

study of LUTS and OAB in Poland, the first reliable epidemiological analysis in a Central and Eastern European country, we observed that 69.8% of adults aged  $\geq 40$  years reported having LUTS (with more women affected than men) [3]. Notably, LUTS and OAB had detrimental effects on the quality of life because more than one-third of the participants had concerns about their urinary-specific quality of life. Worldwide, LUTS and OAB also consume considerable healthcare resources. In the near future, the cost associated with both conditions is expected

to increase to over 5 billion Euro annually in European countries [4]. A substantial part of the LUTS and OAB economic burden is related to treatment [5]. Because LUTS are not currently recognized as disease- or condition-specific, despite being commonly related to bladder outlet obstruction, treatment for LUTS may be complex and multifaceted. There are many therapies for LUTS and OAB, such as conservative treatment with lifestyle changes and behavioral therapies, pharmacological treatment, and surgical treatment, including minimally invasive procedures. Importantly, the cost varies greatly for each of these therapies. Whereas conservative treatment is relatively low-cost, long-term pharmacotherapy and surgery may be expensive. Therefore, reliable assessment of treatment patterns at the population level is of great importance to ascertain current treatment trends, improve healthcare systems, and adequately allocate government-provided resources. In addition, population-based estimations of treatment patterns may substantially improve the education of different types of healthcare professionals because population-based estimates provide real-life data on the use of various treatment methods. Therefore, the aim of this study was to assess, from a representative cohort of Polish adults, patterns of treatment for their LUTS and OAB.

## MATERIAL AND METHODS

The analysis described in this paper is based on data from LUTS POLAND, our population-representative, prospective, and cross-sectional epidemiological study of LUTS and OAB in Poland. We have published complete descriptions of the study concepts, design, methodology, and data collection [3, 6, 7]; thus, only brief accounts of these details are reported here. The LUTS POLAND study included representative groups of men and women, aged  $\geq 40$  years, who resided in all geographical regions of Poland (urban and rural areas). Our research ethics committee approved the study (1072.6120.160.2019), which was also registered with ClinicalTrials.gov (NCT04121936).

### Study design

To design a target sample, we used a sample matching procedure and the most recent census of the Polish population [8]. We carefully considered the general applicability of surveys on population-representative samples in Poland. We elected to use a telephone interview system because internet questionnaires have limitations in stratifications for age, and face-to-face interviews have limitations in stratifications for place of living [9, 10].

### Data collection

Ipsos Poland conducted data collection and provided relevant quality certificates [11]. All participants reported demographics and occurrence of LUTS, as defined by the International Continence Society (ICS). LUTS included frequency, urgency, urgency with fear of leaking, nocturia, urinary incontinence (urge, stress, mixed, leak for no reason), intermittency, slow stream, hesitancy, straining, splitting/spraying, terminal dribble, incomplete emptying, and post-micturition dribble [1]. Participants rated the occurrence of all these symptoms for the prior month with a Likert-like scale (none, less than 1 in 5 times, less than half the time, about half the time, more than half the time, almost always). To identify participants with possible diagnoses of OAB, we included questions from the Overactive Bladder-Validated 8-question Screener (OAB-V8), a validated OAB screening tool that was used widely in other large-scale population-based international studies [12]. During the interview, participants also evaluated the effect of bladder problems on treatment seeking and treatment receiving with further questions that investigated the treatment methods that were used (i.e., lifestyle changes, exercise and physiotherapy, non-prescription drugs, prescription drugs, surgical treatment). All questions, terms, and instruments were presented in Polish. We excluded respondents who had current/past urinary tract infection (within one month) and women who were pregnant at the time of the survey or who had given birth within the preceding six months.

### Objectives

The study objectives were to investigate the treatment patterns for LUTS and OAB in subpopulations of persons who reported symptoms (for LUTS group: at least one symptom occurring 'half the time or more'; for OAB group: score  $\geq 8$  points from the OAB-V8). We extracted the subpopulations from our representative pool of Polish adults who had responded to the nationwide LUTS POLAND survey. The objectives for this treatment subset investigation were pre-specified in the statistical analysis plan, before the survey was undertaken.

### Statistics

For demographic variables and initial data analysis, we used descriptive statistics. The Kruskal-Wallis test was used for continuous variables, and the chi-squared test was used for categorical variables. For sample size calculation, we followed the method-

ology that other investigators used to measure the prevalence of LUTS. The sample size calculation was based on the population age distribution and expected symptom prevalence [13]. Statistical significance was considered at  $p < 0.05$ . SPSS Statistics software (IBM Corporation, Armonk, NY, USA, version 24.0) was used for data analysis.

## RESULTS

### Treatment patterns for lower urinary tract symptoms

Overall, 6,005 respondents representative for age, sex, and place of residence from throughout Poland participated in the survey. Among a group of respondents who reported LUTS that occurred 'half the time or more', 33.5% ( $n = 1013$ ) were seeking treatment, and many of these persons received treatment (26.4%;  $n = 800$ ). Statistically more men than women sought (37.9% vs 30.6%) and received (30.9% vs 23.5%) treatment. We did not identify differences between urban and rural residents in treatment seeking/receiving.

Most participants who obtained treatment received prescription drugs ( $n = 593$ ; 74.1%), followed by over-the-counter drugs ( $n = 206$ ; 25.8%), physiotherapy ( $n = 174$ ; 21.8%), surgery ( $n = 157$ ; 19.6%), and lifestyle changes ( $n = 131$ ; 16.3%). We identified some disparities between men and women (Table 1). Whereas prescription drugs were the most common treatment for both sexes, the second most widely used therapy for men was surgery and over-the-counter drugs for women. Combined treatment, i.e.,

**Table 1.** Treatment methods used for lower urinary tract symptoms and overactive bladder

	Lower urinary tract symptoms <sup>1</sup>		Overactive bladder <sup>2</sup>	
	Men	Women	Men	Women
Treatment received (overall)	373	427	339	431
Lifestyle changes	63 (16.9%)	68 (15.9%)	55 (16.2%)	69 (16.0%)
Physiotherapy	50 (13.4%)*	124 (29.0%)	44 (13.0%)*	121 (28.1%)
Over-the-counter drugs	72 (19.3%)*	134 (31.4%)	58 (17.1%)*	120 (27.8%)
Prescription drugs	324 (86.9%)*	269 (63.0%)	275 (81.1%)*	260 (60.3%)
Surgery	73 (19.6%)	84 (19.7%)	53 (15.6%)	67 (15.5%)

<sup>1</sup>at least one symptom at least 'half the time or more'

<sup>2</sup>at least 8 points from the OAB-V8 questionnaire

\*statistically significant difference between men and women ( $p < 0.05$ )

at least two of the treatment methods investigated, was used for 31.5% ( $n = 252$ ) of the participants.

### Treatment patterns for overactive bladder

Among participants with a possible diagnosis of OAB ( $\geq 8$  points from the OAB-V8 questionnaire), almost 40% ( $n = 810$ ) were seeking treatment, and most received treatment (37.7%,  $n = 770$ ). Again, men were more proactive than women in seeking treatment (51.1% vs 33.7%), and more men than women received treatment (48.4% vs 32.2%). There was no effect of urban/rural status on treatment seeking or receiving.

Prescription drugs were the most common treatment for the OAB cohort ( $n = 535$ ; 69.5%), followed by over-the-counter drugs ( $n = 178$ ; 23.1%), physiotherapy ( $n = 165$ ; 21.4%), lifestyle changes ( $n = 124$ ; 16.1%), and surgery ( $n = 120$ ; 15.6%). Disparities between men and women were noted; although prescription drugs were the most prevalent treatment for men and women, over-the-counter drugs for men and physiotherapy for women were the second most prevalent management options. Thirty-four percent ( $n = 259$ ) of the participants received combined (two or more options) treatment.

### Treatment providers

Most of the participants received treatment from specialists (82.2% overall, including 68.1% from urologists, 10.7% from gynecologists, 3.4% from other specialists). For the rest of respondents who received treatment, therapy was provided by non-specialists (i.e., primary care physicians). We did not observe differences between urban and rural areas in the types of healthcare professionals who delivered treatment.

## DISCUSSION

The assessments in this investigation are an extension of the LUTS POLAND study that included all geographical regions of Poland with adequate proportions of urban and rural areas. Importantly, this study is the first in Central and Eastern Europe in which a population level analysis was performed to deduce treatment patterns for LUTS and OAB. Further, data for our population estimates were extracted from an adult pool representative for age, sex, and place of residence.

We found that treatment seeking for LUTS and OAB was relatively weak; only about one-third of respondents were pursuing treatment for their symptoms. A low level of treatment seeking for LUTS and

OAB has been observed elsewhere and seems to be a significant, global concern. A cluster of population-based inquiries from Europe, Asia, and South America showed that 26–31% of persons with LUTS sought treatment [14, 15, 16]. Thus, our observation of treatment seeking for LUTS and OAB in Poland appears to be comparable with the foregoing population-based studies.

Many reasons have been proposed for the poor rates of treatment seeking by persons with LUTS. LUTS and OAB are often dismissed without adequate management because of social stigma and embarrassment, or because of opinions that these symptoms are natural consequences of age. In addition, some patients have concerns about the financial costs or the adverse effects of treatment. Also, cultural issues are determinants for not seeking medical attention. Therefore, education seems to be a crucial factor for treatment seeking. Without sufficient knowledge and information, patients cannot develop adequate health-related behavior. Moreover, in our study, more men than women sought treatment. These results are agree with other qualitative studies that have demonstrated that men more often seek treatment for their urinary problems because of fears about serious illness, including cancer, whereas women more often relate their symptoms to non-oncological disorders such as urinary tract infection [17]. All these findings suggest that there is an ongoing need to improve public awareness of LUTS and OAB in Poland. We can only speculate that men may be better educated than women about urological disorders. Nevertheless, future health education campaigns concerning LUTS and OAB in Poland need to hit women and men. In addition, we need to underline the fact that education and counselling of LUTS and OAB, apart from public health-improvement programs, can be provided by different types of clinicians, such as physicians (e.g., urologists, gynecologists, general practitioners, geriatrists), nurses, and, in some cases, physiotherapists specialized in pelvic floor physiotherapy [18].

In our investigation, pharmacotherapy with prescription drugs was the most common treatment method for LUTS and OAB. Of particular concern, only 16.3% and 16.1% of respondents with LUTS and OAB, respectively, adopted lifestyle changes as therapy. Management with lifestyle changes and behavioral therapies are currently recommended as a first-line treatment option for LUTS and OAB [18, 19, 20]. Because LUTS and OAB are not life-threatening conditions, all persons who want to initiate therapy should start with some form of lifestyle change or behavioral therapy. In addition, these treatment modalities can be combined easily with other treat-

ments and should form part of any treatment plan. Furthermore, lifestyle changes and behavioral therapies are reversible, non-invasive, and inexpensive with the latter factor especially important for public healthcare systems. The low rate of offering or accepting these two particular treatment methods can be explained by the fact that these forms of therapy require a significant time and effort commitment by the patient, with regular follow-up to achieve success [21]. Therefore, we speculate that not only patients but also clinicians, especially non-urologists, should be carefully educated about LUTS and OAB, particularly with regard to various treatment methods. We should also underline the role of primary care physicians, who can often initiate these non-invasive treatment modalities and follow-up after initiation of this new treatment.

The LUTS POLAND study revealed that there were no differences between urban and rural areas in treatment seeking, treatment receiving, and the treatment methods that were used. Further, the type of treatment provided was not affected by participant urban/rural status. When we designed the LUTS POLAND survey, we hypothesized that persons from rural regions would be less active in treatment seeking compared with people from urban areas. In addition, we speculated that persons from rural regions would more often receive LUTS and OAB treatment from non-specialists (i.e., primary care physicians) compared with people from urban areas. Our speculation arose from a report by Branowitz that people from rural areas in Poland were more hesitant to admit or discuss their health issues [22]. But that report is decades-old. Since 2004, when Poland became a member of the European Union, several large health improvement programs in Polish rural areas were initiated and funded [23]. We did not have longitudinal data that investigated the effect of these programs, but our analysis supports the concept that the health differences between Polish urban and rural areas are beginning to blur. Further, with increasing population density in Poland, we also need to acknowledge that Polish urban and rural areas have started to overlap [23].

Our study was not free from limitations, particularly the nature of data capture and data self-reporting. This concern is especially relevant for OAB because, in routine clinical practice, OAB can be diagnosed in the absence of urinary tract infection or other obvious pathology. Even reliance on the validated OAB screening tool (OAB-V8) does not enable exclusion of storage symptoms secondary to other conditions unrelated to OAB. However, during a telephone survey, without clinical verification, it would have been

difficult to reliably establish from a self-reporting participant the existence of conditions unrelated to OAB. Coyne et al. described this significant information bias of population-based self-reported data [24]. Some of the population estimates, treatment seeking and treatment receiving in particular, may not be generalizable because some local cultural norms (e.g., lifestyle factors) may inhibit individuals from admitting their health issues. We also need to underline limitations on availability of therapeutic options in different countries regulated by different healthcare systems.

## CONCLUSIONS

This study is the first population-based investigation of treatment patterns for LUTS and OAB in Central and Eastern Europe. The degree of treatment seeking for LUTS and OAB in Poland was low, and there were no differences between urban and rural areas. Pharmacotherapy was the most common management modality; currently recommended non-invasive first-line treatment options, particularly lifestyle changes, were used rarely. These findings underline the need for education of patients and physicians about LUTS and OAB and for higher healthcare and financial resources for patients.

## CONFLICTS OF INTEREST

Mikołaj Przydacz reports grants, personal fees and non-financial support from Astellas, grants and personal fees from Ferring, during the conduct of the study; non-financial support from Medtronic, grants from Pfizer, outside the submitted work; Marcin Chłosta has nothing to disclose; Łukasz Belch has nothing to disclose; Anna K. Czech has nothing to disclose; Tomasz Wiatr has nothing to disclose; Katarzyna Gronostaj has nothing to disclose; Marek Lipiński has nothing to disclose;

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## INSTITUTIONAL REVIEW BOARD STATEMENT

The research ethics committee of Jagiellonian University Medical College, Krakow, Poland approved the study (1072.6120.160.2019; approval date 06/27/2019); in addition, the study was registered with ClinicalTrials.gov (NCT04121936). The study was performed in compliance with Good Clinical Practice and in accordance with the Declaration of Helsinki.

## AUTHORS' CONTRIBUTIONS

M. Przydacz: Protocol and project development, Data collection, Data analysis, Manuscript writing and editing  
M. Chłosta: Literature reviewing, Manuscript editing  
L. Belch: Literature reviewing, Manuscript editing  
AK. Czech: Literature reviewing, Manuscript editing  
T. Wiatr: Literature reviewing, Manuscript editing  
K. Gronostaj: Literature reviewing, Manuscript editing  
M. Lipinski: Literature reviewing, Manuscript editing  
P. Chłosta: Protocol and project development, Manuscript editing

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