

BMJ Open Public knowledge, self-management and advice-seeking for lower urinary tract symptoms and nocturia: findings from a national UK cross-sectional survey

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ABSTRACT

Objectives To determine the prevalence of lower urinary tract symptoms (LUTS) and nocturia, public knowledge of associated risk factors, self-management practices and advice-seeking behaviours among community-dwelling adults in the UK, as well as to examine the sociodemographic correlates of these outcomes.

Design A cross-sectional online survey.

Setting Community based, UK.

Participants 2062 UK adults accessed the survey; 2012 provided complete sociodemographic data for analysis (50.2% female, 49.8% male; 81.7% white, 9.4% Asian/Asian British; aged 18–65+ years); convenience sampling via online panels and networks, with informed consent.

Interventions None (observational survey study).
Primary and secondary outcome measures Prevalence of LUTS/nocturia; awareness of symptoms/risk factors; self-management strategies; advice sources; demographic associations.

Results Among all respondents, 52.7% reported experiencing nocturia, with 42.2% having symptoms nightly and 47.1% waking at least twice per night. While 90.5% recognised fluid intake before bed as a cause, knowledge of other risk factors (eg, cardiovascular disease, salt intake, sleep disorders) was limited. Nearly half (43.2%) of those with symptoms had never sought advice; only 27% sought professional input. Online resources (eg, National Health Service website, Google) were consulted more frequently than healthcare professionals. Age, sex, ethnicity, long-term condition status and disability were associated with variations in awareness and advice-seeking behaviours.

Conclusions Nocturia is highly prevalent, but advice-seeking is quite low. While awareness of behavioural contributors is relatively good, several contributing medical conditions and other health-related factors were less known. These findings highlight a need for national health literacy campaigns focused on specific risk factors, evidence-based self-care tools and greater professional engagement. Addressing these gaps can normalise discussions about bladder health, reduce stigma and improve early detection and management of LUTS in the community.

STRENGTHS AND LIMITATIONS OF THIS STUDY

- ⇒ Large, national community sample of over 2000 UK adults enhances precision of estimates and supports exploration of sociodemographic patterning of lower urinary tract symptoms across multiple domains.
- ⇒ Comprehensive questionnaire design simultaneously captured symptom awareness, lived experience and perceived causes spanning storage, voiding and postmicturition symptoms, providing methodologically rich data beyond simple prevalence.
- ⇒ Cross-sectional online survey design limits the ability to infer causal or temporal relationships between exposures and outcomes, constraining interpretation of directional effects.
- ⇒ Non-probability, convenience sampling and online-only administration restrict generalisability, under-representing individuals with limited internet access, lower digital literacy or less interest in urinary health.
- ⇒ Reliance on self-reported measures introduces potential recall and social desirability bias, meaning reported symptoms and behaviours may not fully reflect actual experiences or clinical status.

BACKGROUND

Lower urinary tract symptoms (LUTS) refer to a broad constellation of symptoms. According to the International Continence Society, LUTS can be divided into the following three categories: (1) storage symptoms, including incontinence, increased voiding frequency, urgency and urgency incontinence, feeling discomfort when urinating (dysuria) and needing to get up at night to urinate (nocturia)¹; (2) voiding symptoms, including poor stream, hesitancy and terminal dribbling; and (3) postmicturition symptoms, including incomplete

emptying of the bladder and involuntary loss of urine immediately after urination (postmicturition dribble).²

Epidemiology of LUTS (EpiLUTS), a cross-sectional, population-representative survey conducted online in 2008 in the USA, the UK and Sweden found that 72.3% of men and 76.3% of women experienced at least one LUTS 'sometimes' or more often, while 47.9% of men and 52.5% of women experienced one or more LUTS at least 'often' for men and women, respectively.³ The constellation of symptoms associated with LUTS significantly affects health-related quality of life (HRQL) and has been reported in various studies to be 'bothersome' for those who experience them.²

Nocturia is one of the most common LUTS, defined simply as needing to get up at night at least once to pass urine.⁴ The EpiLUTS study found that nocturia was common among the 30 000 participants, with 69% of men and 76% of women waking up at least once at night, and 28% of men and 34% of women reporting at least two nocturia episodes per night.⁵ Nocturia is common in both men and women, especially with increasing age, which is a risk factor for several potential causes.^{6,7} While nocturia once per night is usually not problematic, twice per night or more frequently impairs sleep quality, subsequently negatively impacting overall HRQL.^{8–10}

Nocturia can be caused by a dysfunction within one or more of the following systems: neurological, cardiovascular, renal, endocrine and urological. Sleep disorders may also be a cause of nocturia and not just a consequence.¹¹ It may also be due to specific drinking or eating habits and the use of certain medications, including calcium channel blockers or those with a diuretic effect.¹² Recommended assessment options include a detailed history, a physical examination, use of a patient questionnaire and the completion of a bladder diary (recording the intake and output of fluids, their timing, frequency and possibly urgency).^{13–15} Specific blood tests can also be used to identify renal or endocrine disease while dipstick testing may find indicators of chronic kidney disease.¹⁶ Management strategies include the use of medication, behavioural interventions (such as limiting fluid intake prior to sleep, avoiding caffeinated and alcoholic beverages), altering the timing of diuretic medication or the use of compressive stockings.^{6,17}

A 2016 study based on real-life patient data from France, Germany, Spain, the UK and the USA found that nocturia remains under-reported, underdiagnosed and poorly managed, thus calling for improved awareness of nocturia among patients and physicians.¹⁸ The inadequate recognition and diagnosis of nocturia have been identified as a major barrier to adequate care.^{18,19}

Nocturia is already recognised as a highly prevalent, normalised and health literacy-dependent symptom that systematically fails to trigger help-seeking, creating delayed detection of potential cardiometabolic, sleep and urological disease. The primary aim of this paper was to assess public knowledge, self-management practices and information-seeking behaviours related to LUTS, with a

particular focus on nocturia, among community-dwelling adults in the UK. This included exploring participants' understanding of the causes and risk factors of nocturia; examining self-management practices adopted by individuals experiencing nocturia symptoms; investigating patterns of information-seeking behaviours and preferred sources of advice; and analysing demographic factors associated with these attitudes and practices. Secondary aims included the identification of barriers to seeking professional healthcare advice and the assessment of the level of comfort in discussing urinary symptoms with various types of healthcare professionals (HCPs).

This manuscript is the first of two companion papers arising from a large national survey on nocturia and LUTS in the UK. The primary focus of this study was nocturia, examined within the broader context of LUTS. While this paper focuses on public knowledge, perceptions and advice-seeking behaviours, the second paper shifts focus to individuals who sought professional help, examining their experiences of clinical assessment, management, referral and satisfaction with care.²⁰ Together, these two papers provide a comprehensive account of how nocturia is understood, self-managed and addressed within UK health systems, offering valuable insights for patient education, service design and clinical practice improvement.

METHODS

Study design

This cross-sectional study aimed to explore the general knowledge, awareness and self-management practices for LUTS among community-dwelling adults in the UK along with the sociodemographic factors which may affect them. The study employed a quantitative methodology using an electronic survey (eSurvey) tool.

Eligibility criteria

Participants were eligible to take part if they were adults aged 18 years or over and residing in the UK. There were no restrictions based on sex, ethnicity or health status. No clinical diagnosis of any urinary condition was required for participation, as the survey was designed for community-dwelling adults regardless of symptom status.

Survey development

Survey development followed an iterative process. An initial draft was developed by the research team, drawing on existing literature on LUTS, nocturia, health literacy and patient-reported outcomes. Content validity was reviewed by clinical and public health experts within the team, including a urologist and a primary care physician with expertise in LUTS management. The survey was then piloted with a small group of lay members of the public (n=5) who provided feedback on comprehension, clarity and navigation. Minor amendments were made based on this feedback. Technical functionality, adaptive questioning logic and display formatting were tested on

the Imperial College Qualtrics platform across multiple devices before the survey was launched (online supplemental file 1).

Data collection

This was an open eSurvey, accessible to anyone with the survey link. The voluntary survey required less than 5 min to complete, though the time taken may vary depending on the options selected. Adaptive questioning was used so, for example, having experienced specific symptoms or having consulted one or more HCPs regarding these symptoms led to the display of specific questions relating to these experiences. It should be noted that LUTS domain experience was assessed using lifetime recall, whereas nocturia frequency was assessed based on the respondent's current habitual nocturnal voiding pattern. In its longest version, the survey was composed of 33 questions, including nine for sociodemographic information such as age, gender and employment status. The other questions related to knowledge, attitudes and experiences. In its longest version, the survey was displayed over 13 pages, with a maximum of six questions per page. Respondents could not use a back button to revise their responses.

The link to the eSurvey was active on the Imperial College Qualtrics platform between 2 December 2024 and 9 January 2025. The survey included a link to the Participant Information Sheet which informed potential respondents on the study's aims, the protection of participants' personal data, their right to withdraw from the study at any time, which data were stored, where and for how long, who the investigator was, the purpose of the study and survey length. Participants were recruited through convenience sampling via two main channels. First, the survey link was posted on Prolific Academic,²¹ a validated online research participant platform that recruits from a diverse UK-registered panel of adults who have consented to participate in research studies. Second, personal and professional networks of the research team were mobilised to share the survey link, and it was specifically distributed by email to the Primary Care Urology Society for dissemination to their membership and contact lists. No targeted sampling strata were applied, and individuals could access the survey freely via the shared link. All recruitment and participation occurred online. Participants recruited via Prolific Academic received a small financial incentive. No incentive was offered to participants recruited via personal and professional networks or the Primary Care Urology Society mailing list. Informed consent was obtained from all participants at the beginning of the survey via an electronic consent screen. They were informed that participation was entirely voluntary and that they could withdraw at any time without consequence. Data collected were stored on a secure database at Imperial College London and were only accessible to the research team. All responses were pseudoanonymised to ensure confidentiality.

Data analysis

Only questionnaires completed fully were included in the analysis. Duplicate entries from the same IP address within a 24-hour period were also eliminated before analysis. Participant characteristics and responses were summarised using total (n) and relative (%) frequencies. The association between demographic factors and awareness of various urinary symptoms (nocturia, incontinence, slow stream, dribbling, frequency, urgency) was examined using generalised linear models with a binomial family and log link to estimate unadjusted prevalence ratios (PR) and 95% CIs. For adjusted analyses, we included age, assigned sex at birth, ethnicity, education, long-term conditions (LTC) and disability status as covariates. Due to convergence issues with some log-binomial models, we applied a modified Poisson regression approach with robust error variance, which provides consistent and interpretable estimates of PRs for common outcomes in cross-sectional studies. Associations between categorical variables were examined using the χ^2 test. Statistical significance was set at $p < 0.05$. All analyses were performed using STATA V.17 (StataCorp, College Station, Texas, USA). The Checklist for Reporting Results of Internet E-Surveys was used to guide reporting²² (online supplemental file 2).

Patient and public involvement

Members of the public were involved in the dissemination of the survey through sharing the questionnaire link via personal and professional networks, providing feedback on the questionnaire content prior to launch and contributing to plans for disseminating study findings to wider communities.

RESULTS

Demographic profile of respondents

A total of 2062 individuals participated in the survey, with 2012 providing complete sociodemographic data and included in the final analysis (equating to a completion rate of 97.6%). As detailed in [table 1](#), participants showed a balanced distribution by assigned sex at birth, comprising 50.2% females and 49.8% males. Most participants (98.8%) identified with the sex assigned at birth, while 1.2% did not. Over a third (35.1%) of participants were aged 18–34, and 35.4% were 35–49 years old, together comprising over 70% of the sample. The majority identified as white (81.7%), with smaller proportions from Asian or Asian British (9.4%) and black or black British (4.1%) descent. Most participants were employed full time (60.2%) and a large proportion held a university degree or higher (61.9%). About one-fifth reported having an LTC (19.9%) and a smaller proportion reported a disability (5.9%).

Main survey findings

Survey findings are presented in [table 2](#). More than half of respondents (61.4%, n=1240) had experienced storage symptoms, almost a third (32%, n=644) postmicturition

Table 1 Participants' sociodemographics

Overall (n=2012)	n (%)
Age	
18–34	706 (35.1)
35–49	713 (35.4)
50–64	479 (23.8)
65+	114 (5.7)
Assigned sex at birth	
Female	1011 (50.2)
Male	1001 (49.8)
Do you identify with the sex you were assigned at birth?	
Yes	1987 (98.8)
No	24 (1.2)
Prefer not to say	1 (0.0)
How do you identify? (n=24)	
N-miss	1
Non-binary	6 (26.1)
Trans man/transmasculine	8 (34.8)
Trans woman/transfeminine	4 (17.4)
Other	5 (21.7)
Ethnic background	
White	1644 (81.7)
Asian or Asian British	190 (9.4)
Black, black British, Caribbean or African	82 (4.1)
Mixed or multiple ethnic groups	60 (3.0)
Other	26 (1.3)
Prefer not to say	10 (0.5)
Employment status	
Employed full time	1211 (60.2)
Employed part time	357 (17.7)
Student	104 (5.2)
Retired	158 (7.9)
Unemployed	151 (7.5)
Prefer not to say	31 (1.5)
Highest level of education	
Secondary school	234 (11.6)
A levels/college	527 (26.2)
University degree or higher	1245 (61.9)
Prefer not to say	6 (0.3)
Long-term condition	
Yes	400 (19.9)
No	1539 (76.5)
Prefer not to say	73 (3.6)
Disability	
Yes	118 (5.9)
No	1832 (91.1)
Prefer not to say	62 (3.1)

symptoms and 18.7% (n=376) voiding symptoms. Only 25.9% (n=521) of respondents reported having never experienced any LUTS. Regarding nocturia, 1060

Table 2 Main survey findings

Overall (n=2012)	n (%)
LUTS is the general name given to a group of symptoms. Which of the following symptoms had you previously heard about before starting this survey?*	
Nocturia (waking up at least once at night to go urinate)	1186 (58.9)
Urinary incontinence (unintentional passing of urine)	1337 (66.5)
Slow urinary stream	621 (30.9)
Urinary dribbling or leaking after urinating	1063 (52.8)
Increased urinary frequency	1376 (68.4)
Urgency (sudden urgent urge to urinate)	1243 (61.8)
Which of the following factors and health conditions do you think may cause nocturia?*	
Age	1838 (91.4)
Brain trauma or injury	482 (24.0)
Childbirth, pregnancy or menopause	1268 (63.0)
Diabetes	978 (48.6)
Heart disease or congestive heart failure	205 (10.2)
High blood pressure	351 (17.4)
Pelvic organ prolapse	831 (41.3)
Prostate disorders (eg, prostate obstruction)	1162 (57.8)
Restless legs syndrome	144 (7.2)
Sleep disorders, such as obstructive sleep apnoea	524 (26.0)
Swollen legs (oedema)	174 (8.6)
Other	46 (2.3)
Which of the following behaviours and habits do you think could cause nocturia?*	
Drinking too much fluid before bedtime	1821 (90.5)
Drinking a lot of caffeinated beverages	1396 (69.4)
Taking certain medications	1497 (74.4)
High salt consumption	732 (36.4)
LUTS can be divided into three categories: storage symptoms, including incontinence, needing to urinate more frequently, urgency and needing to get up at night to urinate (nocturia); voiding symptoms, including poor stream and hesitancy; and postmicturition symptoms, including incomplete emptying of the bladder and experiencing a dribble after passing urine. Based on this, have you ever experienced any of the above symptoms?*	
Yes, I have experienced storage symptoms	1240 (61.6)
Yes, I have experienced voiding symptoms	376 (18.7)
Yes, I have experienced postmicturition symptoms	644 (32.0)
No, I have never experienced any of the above	521 (25.9)
Nocturia is present when someone wakes up at least once during the night to pass urine. Do you experience nocturia?† (n=1240)	
Missing	2
Yes	1060 (85.6)
No	178 (14.4)
How often do you experience nocturia symptoms? (n=1060)	
Occasionally (less than once a week)	171 (16.1)
At least once a week	442 (41.7)
Every night	447 (42.2)

Continued

Table 2 Continued

Overall (n=2012)	n (%)
On nights where you do experience nocturia, how often do you need to get up to pass urine on average? (n=1060)	
Only once	561 (52.9)
Up to twice	386 (36.4)
Up to three times or more	113 (10.7)
Do you do any of the following to self-manage your nocturia symptoms? (n=1060)	
Drinking less prior to going to bed	661 (62.4)
Not drinking anything 2 hours before bed	239 (22.5)
Reducing your caffeinated beverages	321 (30.3)
Other	22 (2.1)
I don't do anything	277 (26.1)
Where did you seek information and advice from regarding these LUTS symptoms?‡ (n=1491)	
From a healthcare professional (doctor, nurse, pharmacist, etc)	363 (24.3)
From family and friends	211 (14.2)
From local community groups	13 (0.9)
From a library	11 (0.7)
Online on the NHS website	430 (28.8)
Online using Google and other search engines	447 (30.0)
Online by reading forums and discussions with other people experiencing similar symptoms	128 (8.6)
Other	14 (0.9)
I have not sought any information or advice	664 (44.5)
Which healthcare professional did you discuss your symptoms with? (n=363)	
A nurse	86 (23.7)
A doctor/GP	260 (71.6)
A pharmacist	38 (10.5)
A specialist	47 (12.9)
Why didn't you talk about your symptoms to a healthcare professional? (n=1128)	
They do not bother me so much	835 (74.0)
I feel uncomfortable talking about this topic with a healthcare professional	203 (18.0)
I haven't had the chance to bring it up during a consultation	301 (26.7)
Other	254 (22.5)
If you were to experience any of these symptoms in the future, where and whom would you seek information from? (n=521)	
From a healthcare professional (GP, nurse, pharmacist, etc)	435 (83.5)
From family and friends	94 (18.0)
From local community groups	7 (1.3)
From a library	5 (1.0)
Online on the NHS website	296 (56.8)
Online using Google and other search engines	169 (32.4)
Online by reading forums and discussions with other people experiencing similar symptoms	93 (17.9)
Other	5 (1.0)
I would not seek any advice or information	20 (3.8)

Continued

Table 2 Continued

Overall (n=2012)	n (%)
Which healthcare professional would you feel comfortable discussing your symptoms with? (n=435)	
A doctor/GP	426 (97.9)
A nurse	247 (56.8)
A pharmacist	108 (24.8)
A specialist	42 (9.7)
*Participants were permitted to select all applicable responses; therefore, percentages may not sum to 100%.	
†Of all 2012 respondents, 1060 (52.7%) reported experiencing nocturia. Of the 1240 who reported storage symptoms, 1060 (85.6%) reported nocturia.	
‡Respondents could select multiple sources of information; therefore, column frequencies exceed the denominator. The group who reported not seeking any advice (n=664) was excluded from the multiple-select calculation. n=1491 represents all participants who reported ever experiencing any LUTS.	
GP, general practitioner; LUTS, lower urinary tract symptoms; NHS, National Health Service.	

respondents, representing 52% of all respondents and 85.6% of those with a history of storage symptoms, had experienced nocturia.

Factors associated with experiencing LUTS

Increasing age was independently associated with a higher prevalence of all LUTS categories (table 3, online supplemental table 1). Compared with respondents aged 18–34 years, those aged 50–64 and ≥65 years had significantly higher adjusted prevalence of storage, voiding and postmicturition symptoms, with the strongest associations observed for voiding symptoms (online supplemental table 2). Sex assigned at birth showed divergent patterns: females were more likely than males to report storage symptoms (adjusted prevalence ratio (aPR) 1.19, 95% CI 1.11 to 1.28), but less likely to report voiding (aPR 0.54, 95% CI 0.44 to 0.67) and postmicturition symptoms (aPR 0.69, 95% CI 0.60 to 0.79). LTC and disability were associated with higher LUTS prevalence, particularly storage and postmicturition symptoms.

Knowledge and awareness of LUTS

Awareness of LUTS varied by symptom. More than half of respondents had heard of most LUTS, except slow urinary stream, which was recognised by fewer than one-third (30.9%, n=621). Awareness was highest for increased urinary frequency (68.4%, n=1376) and urinary incontinence (66.5%, n=1337).

Age was the most recognised cause of nocturia (91.4%, n=1838), followed by pregnancy, childbirth or menopause (63.0%, n=1268) and prostate disorders (57.8%, n=1162). Awareness of reproductive factors differed by sex, with 81.2% of females identifying pregnancy-related causes compared with 44.7% of males. Other contributors were least recognised, including high blood pressure (17.4%, n=351), heart disease or congestive heart failure (10.2%, n=205), restless legs syndrome (7.2%, n=144) and swollen legs (8.6%, n=174).

Awareness of behavioural contributors however was higher. Excessive fluid intake before bedtime was

Table 3 Association between experiencing LUTS and age, sex assigned at birth, LTC and disability

Have you ever experienced storage symptoms?				Have you ever experienced voiding symptoms?				Have you ever experienced postmicturition symptoms?				
Variable	Unadjusted PR (95% CI)	P value	Adjusted* (modified Poisson)	P value	Unadjusted aPR (95% CI)	P value	Adjusted* (modified Poisson)	P value	Unadjusted PR (95% CI)	P value	Adjusted* (modified Poisson)	P value
			PR (95% CI)				aPR (95% CI)				aPR (95% CI)	
Age												
18–34	Ref		Ref		Ref		Ref		Ref		Ref	
35–49	1.21 (1.10 to 1.32)	<0.001	1.16 (1.05 to 1.28)	0.002	1.22 (0.96 to 1.54)	0.102	1.13 (0.87 to 1.48)	0.355	1.31 (1.11 to 1.54)	0.002	1.30 (1.09 to 1.56)	0.004
50–64	1.44 (1.32 to 1.57)	<0.001	1.42 (1.28 to 1.57)	<0.001	1.54 (1.21 to 1.97)	<0.001	1.36 (1.03 to 1.79)	0.029	1.55 (1.31 to 1.84)	<0.001	1.44 (1.19 to 1.74)	<0.001
65+	1.36 (1.19 to 1.57)	<0.001	1.33 (1.11 to 1.58)	0.002	2.08 (1.50 to 2.89)	<0.001	1.53 (1.01 to 2.31)	0.045	1.79 (1.41 to 2.28)	<0.001	1.54 (1.12 to 2.11)	0.007
Sex assigned at birth												
Male	Ref		Ref		Ref		Ref		Ref		Ref	
Female	1.17 (1.09 to 1.25)	<0.001	1.19 (1.11 to 1.28)	<0.001	0.61 (0.50 to 0.73)	<0.001	0.54 (0.44 to 0.67)	<0.001	0.71 (0.62 to 0.81)	<0.001	0.69 (0.60 to 0.79)	<0.001
LTC												
No	Ref		Ref		Ref		Ref		Ref		Ref	
Yes	1.25 (1.16 to 1.35)	<0.001	1.92 (1.59 to 2.33)	<0.001	1.60 (1.28 to 2.00)	<0.001	1.15 (1.06 to 1.25)	0.001	1.44 (1.25 to 1.65)	<0.001	1.29 (1.10 to 1.52)	0.002
Disability												
No	Ref		Ref		Ref		Ref		Ref		Ref	
Yes	1.25 (1.12 to 1.40)	<0.001	2.30 (1.80 to 2.95)	<0.001	1.73 (1.28 to 2.34)	<0.001	1.13 (0.99 to 1.27)	0.061	1.59 (1.31 to 1.94)	<0.001	1.34 (1.07 to 1.67)	0.011
*Adjusted for age, sex, assigned birth sex, ethnicity, employment status, education level, presence of LTC and disability status. PR, adjusted prevalence ratio; LTC, long-term conditions; LUTS, lower urinary tract symptoms; PR, prevalence ratio.												

*Adjusted for age, sex, assigned birth sex, ethnicity, employment status, education level, presence of LTC and disability status.
aPR, adjusted prevalence ratio; LTC, long-term conditions; LUTS, lower urinary tract symptoms; PR, prevalence ratio.

identified by most respondents (90.5%, n=1821), followed by medication use (74.4%, n=1497) and high caffeine consumption (69.4%, n=1396), whereas high salt intake was less commonly recognised (36.4%, n=732).

These perceptions were reflected in self-management practices: among respondents experiencing nocturia, 62.4% (n=661) reported reducing fluid intake before bed, 22.5% (n=239) avoided drinking for 2 hours before sleep and 30.3% (n=321) reduced caffeine intake. However, more than a quarter reported no self-management strategies (26.1%, n=277) (table 2).

Sociodemographic factors influencing participants' awareness of LUTS

Age was strongly associated with greater awareness of LUTS (online supplemental table 3). Compared with respondents aged 18–34 years, those aged 35–49, 50–64 and ≥65 years demonstrated progressively higher aPRs for awareness of nocturia, urinary incontinence and slow urinary stream. For example, respondents aged ≥65 years showed significantly greater awareness of slow urinary stream (aPR 2.47, 95% CI 1.81 to 3.37, p<0.001) and nocturia (aPR 1.24, 95% CI 1.03 to 1.49, p=0.023). Awareness of urinary incontinence also increased with age, with aPRs rising from 1.21 in the 35–49 group to 1.39 in those aged ≥65 years (p=0.001).

Respondents assigned female at birth were more likely than males to be aware of urinary incontinence (aPR 1.28, 95% CI 1.20 to 1.37, p<0.001) and urgency (aPR 1.37, 95% CI 1.27 to 1.48, p<0.001). Conversely, females were less likely to report awareness of slow urinary stream (aPR 0.75, 95% CI 0.65 to 0.86, p<0.001) and urinary dribbling (aPR 0.86, 95% CI 0.79 to 0.94, p=0.001), for which males were the reference group. Ethnic differences were also observed.

Compared with white respondents, Asian or Asian British participants were less likely to be aware of urinary incontinence (aPR 0.78, 95% CI 0.68 to 0.91, p=0.001) and increased urinary frequency (aPR 0.85, 95% CI 0.75 to 0.97, p=0.013). Black, black British, Caribbean or African respondents demonstrated higher awareness of nocturia (aPR 1.27, 95% CI 1.09 to 1.49, p=0.002), with no significant differences observed for other symptoms after adjustment.

Health status was also associated with awareness. Respondents with LTC had higher awareness of increased urinary frequency (aPR 1.15, 95% CI 1.07 to 1.23, p<0.001) and urgency (aPR 1.10, 95% CI 1.01 to 1.20, p=0.034), while respondents with disabilities showed higher awareness of urinary dribbling (aPR 1.21, 95% CI 1.03 to 1.43, p=0.018). Education level and employment status showed no consistent associations with LUTS awareness after adjustment (online supplemental table 3). Symptom experience was intentionally not included as a covariate as it was considered to lie on the causal pathway between sociodemographic factors and awareness; adjusting for it would risk overadjustment and mask the total sociodemographic effect on awareness. It is acknowledged, however,

that observed demographic differences in awareness may partly reflect differences in symptom exposure rather than independent differences in health literacy, and these findings should be interpreted accordingly.

Advice-seeking behaviours and choices

Among respondents who had experienced LUTS, almost half reported not seeking any advice or information regarding their symptoms (44.5%, n=664). Among those who did seek advice, online sources predominated. Search engines were used by 30.0% (n=447), the National Health Service (NHS) website by 28.8% (n=430) and online forums by 8.6% (n=128). HCPs were consulted by 24.3% (n=363), while advice from family or friends was sought by 14.2% (n=211). Community groups and libraries were rarely used (<1% each) (table 2).

Among respondents who consulted HCPs, doctors or general practitioners (GPs) were the most frequently approached (71.6%, n=260), followed by nurses (23.7%, n=86), specialists (12.9%, n=47) and pharmacists (10.5%, n=38).

Among respondents who did not discuss their symptoms with an HCP (n=1128), the most cited reason was that symptoms were not considered bothersome (74.0%, n=835). Other reported barriers included lack of opportunity during consultations (26.7%, n=301) and discomfort discussing urinary symptoms (18.0%, n=203). Additional reasons (22.5%, n=254) included symptom normalisation, perceptions of minor severity, difficulties accessing care, concerns about wasting clinicians' time and embarrassment.

By contrast, among respondents who had not experienced LUTS (n=521), most reported they would seek professional advice if symptoms developed (83.5%, n=435). Online sources remained popular, particularly the NHS website (56.8%, n=296) and search engines (32.4%, n=169), while 18.0% (n=94) anticipated seeking advice from family or friends. Only 3.8% (n=20) reported they would not seek any advice. Nearly all indicated they would feel comfortable discussing symptoms with a doctor or GP (97.9%, n=426), compared with nurses (56.8%, n=247), pharmacists (24.8%, n=108) and specialists (9.7%, n=42) (table 2).

Sociodemographic and life-course influences on advice-seeking behaviours

Among respondents who experienced LUTS, advice-seeking behaviour varied across the life course, although differences by age and sex assigned at birth did not reach statistical significance (table 4). The likelihood of not seeking any information increased with age, from 41.1% (n=189) among those aged 18–34 years to 48.4% (n=45) among those aged ≥65 years. Across age groups, males were slightly less likely than females to seek advice, with 54.0% (n=396) of males seeking some information compared with 56.9% of females (n=431).

Among respondents who sought advice, life-course differences emerged in the choice of information

Table 4 Association between age, assigned sex at birth and not seeking information or advice for LUTS (n=1491)

Variable	Where did you seek information and advice regarding these LUTS symptoms? I have not sought any information or advice.		P value	Total
	Selected	Not selected		
Age			0.320	
18–34	189 (41.1%)	271 (58.9%)		460 (100%)
35–49	244 (45.4%)	293 (54.6%)		537 (100%)
50–64	186 (46.4%)	215 (53.6%)		401 (100%)
65+	45 (48.4%)	48 (51.6%)		93 (100%)
Assigned sex at birth			0.246	
Female	326 (43.1%)	431 (56.9%)		757 (100%)
Male	338 (46%)	396 (54%)		734 (100%)
Total	664	827		1491

LUTS, lower urinary tract symptoms.

sources. Reliance on informal sources—family, friends and community groups—declined significantly with age ($p<0.001$). Younger adults (18–34 years) were most likely to use these sources (20.6%, $n=95$), compared with those aged 50–64 years (9.0%, $n=36$) and those aged ≥ 65 years (9.7%, $n=9$). Although not statistically significant, consultation with HCPs showed a U-shaped pattern across the life course, being more common among both younger adults (18–34 years: 28.0%, $n=129$) and older adults (≥ 65 years: 26.9%, $n=25$) (table 5).

Among respondents who consulted an HCP ($n=363$), life-course and sex-based differences were also evident in the type of professional consulted (online supplemental table 4). Males were significantly more likely than females to consult a doctor or GP (81.9%, $n=136$ vs 62.9%, $n=124$; $p<0.001$), whereas females were more likely to consult nurses ($p=0.001$) and pharmacists ($p=0.028$). Age was significantly associated with specialist consultation ($p=0.003$), with use increasing across the life course and peaking among those aged ≥ 65 years (24.0%, $n=6$). Younger adults (18–34 years) were more likely to consult pharmacists (15.5%, $n=20$), although this association did not reach statistical significance ($p=0.109$) (online supplemental table 4).

DISCUSSION

Summary of key findings

Nocturia is a highly prevalent yet normalised symptom that appears strongly shaped by health literacy and routinely fails to trigger timely help-seeking, potentially delaying detection of underlying cardiometabolic, sleep and urological conditions. This study provides a comprehensive assessment of knowledge, awareness, self-management and information-seeking behaviours related to nocturia, among other LUTS, among UK community-dwelling adults, with a particular focus on nocturia.

Awareness of LUTS and nocturia was closely associated with lived experience. Both prevalence and awareness increased with age, consistent with cumulative exposure

and greater symptom salience across the life course. Respondents assigned female at birth demonstrated higher awareness of the role of pregnancy, childbirth and menopause in nocturia risk and were more likely to report awareness and experience of storage symptoms, including nocturia, urgency, frequency and incontinence. In contrast, males showed greater awareness and experience of voiding and postmicturition symptoms, such as weak urinary stream and postvoid dribbling.

Having an LTC or disability was associated with both higher LUTS prevalence and greater awareness, likely reflecting increased health system contact and symptom monitoring. Although overall LUTS prevalence did not differ significantly by ethnicity, important differences in awareness were observed. Respondents identifying as black, black British, Caribbean or African reported significantly higher awareness of nocturia, alongside a modestly higher prevalence, underscoring the role of sociodemographic context in shaping symptom recognition.

Respondents demonstrated relatively good awareness of common nocturia contributors, such as age and excessive fluid intake, but awareness of several other health-related factors remained limited. These patterns were associated with self-management: 62.4% of respondents reported reducing fluid intake before bedtime and 30.3% reported reducing caffeine consumption. However, more than a quarter (26.1%) of affected respondents reported adopting no self-management strategies.

Advice-seeking behaviours further revealed substantial gaps. Almost half of the respondents experiencing LUTS did not seek any information or advice, with non-seeking increasing with age. Among those who sought support, online sources were more frequently used than HCPs, with only 24.3% consulting a clinician. Younger adults were more likely to rely on informal networks, whereas GPs were the dominant point of medical contact among help-seekers, particularly men. Women were more likely to consult nurses or pharmacists, although GPs remained their most common provider. The most frequently cited

Table 5 The association between age, sex and seeking advice from healthcare professionals; family, friends and local community groups; and other sources (n=1491)

Variables	Healthcare professionals			Family, friends and local community groups			Other sources		
	No	Yes	P value	No	Yes	P value	No	Yes	P value
Age category									
18–34	331 (72.0%)	129 (28.0%)	0.110	365 (79.4%)	95 (20.6%)	<0.001	450 (97.8%)	10 (2.2%)	0.717
35–49	415 (77.3%)	122 (22.7%)		459 (85.5%)	78 (14.5%)		530 (98.7%)	7 (1.3%)	
50–64	314 (78.3%)	87 (21.7%)		365 (91.0%)	36 (9.0%)		395 (98.5%)	6 (1.5%)	
65+	68 (73.1%)	25 (26.9%)		84 (90.3%)	9 (9.7%)		91 (97.9%)	2 (2.1%)	
Sex assigned at birth									
Male	568 (77.4%)	166 (22.6%)	0.125	634 (86.4%)	100 (13.6%)	0.283	718 (97.8%)	16 (2.2%)	0.136
Female	560 (74.0%)	197 (26.0%)		639 (84.4%)	118 (15.6%)		748 (98.8%)	9 (1.2%)	
Total	1128 (75.6%)	363 (24.4%)		1273 (85.4%)	218 (14.6%)		1466 (98.3%)	25 (1.7%)	

barrier to professional consultation was that symptoms were not perceived as bothersome (70%), followed by discomfort discussing urinary symptoms (18%).

Taken together, these findings highlight critical gaps across LUTS awareness, self-management and healthcare engagement. They underscore the need for improved public health education, earlier legitimisation of nocturia as a clinically meaningful symptom and targeted strategies to support timely assessment and nurse-led self-management pathways in the community.²³

Symptom appraisal, normalisation and help-seeking

These findings can be interpreted using symptom appraisal theory, which conceptualises help-seeking as a staged process involving *recognition*, *interpretation* and *legitimation* of symptoms. Individuals must first recognise a bodily change as a symptom, interpret its cause and significance and then legitimise it as sufficiently serious to warrant medical attention.

In this study, recognition of nocturia was high, with over half of respondents reporting nocturnal voiding and many experiencing symptoms nightly or multiple times per night. However, recognition alone did not translate into healthcare engagement. Instead, nocturia was commonly interpreted as a normal or expected consequence of ageing, lifestyle or fluid intake. Such interpretations are known to downplay perceived clinical relevance and suppress help-seeking, particularly for symptoms that are chronic, intermittent or socially sensitive.²⁴

The final stage of appraisal—*legitimation*—appears to be a critical barrier. Nearly half of respondents with LUTS had not sought any information or advice, most often because symptoms were considered ‘not bothersome enough’ or insufficient to justify raising during consultations. This suggests that nocturia frequently fails to cross an internal threshold of concern required to legitimate medical attention. The discrepancy observed between respondents’ actual help-seeking behaviour and their stated intention to consult an HCP if symptoms arose in the future further highlights the role of symptom normalisation once nocturia becomes familiar. Together, these findings indicate that low healthcare engagement for nocturia is driven less by lack of symptom recognition than by interpretive and legitimising processes that minimise clinical significance, with implications for delayed detection of underlying cardiometabolic and sleep-related conditions. This also highlights that if awareness is experience driven, primary prevention and early detection will never occur without deliberate education.

Comparison with existing literature

Regarding LUTS prevalence, the findings of this study are mostly in line with the EpiLUTS study. However, the reported nocturia prevalence in this study (52.7%) is slightly lower compared with the 69% of men and 76% of women waking up at least once at night in EpiLUTS.⁵ Public awareness of nocturia non-urological risk factors was lower than urological ones in our cohort, mirroring

prior research demonstrating cardiovascular disease, hypertension and high salt intake are frequently under-recognised.^{11 12} To an extent, this also applies within the medical profession.²⁵

In line with existing literature, we observed that healthcare-seeking behaviour for nocturia is low, with many individuals perceiving their symptoms as non-bothersome or feeling uncomfortable discussing them with healthcare providers.^{9 18 26} The normalisation of nocturia, particularly in older adults, may contribute to its under-reporting.¹⁰ A previous study has also suggested that patients usually seek HCP assistance when symptoms intensify or become worrisome and that feeling comfortable with a provider can also be important for disclosure, especially among women patients.²⁷

Additionally, our finding that the internet was a primary source of information aligns with broader trends indicating increasing patient reliance on digital health resources, while also highlighting somewhat limited satisfaction with the information available. This highlights the role of governments, health organisations and social media platforms in providing and guaranteeing the quality, accessibility and accuracy of available health information.^{28 29} Collectively, these findings contribute to the growing body of evidence emphasising the need for improved public health education and increased support and guidance for self-management of LUTS.

Implications for research and policy

The findings of this study highlight critical gaps in the awareness, assessment and management of nocturia, underscoring the need for targeted interventions at both the policy, community and clinical practice levels.

Since a significant proportion of individuals do not seek medical advice for nocturia if perceived as non-bothersome or because of discomfort in discussing symptoms, HCPs should be encouraged to proactively inquire about LUTS during consultations, normalising discussions around bladder health and reducing stigma. Integrating LUTS screening into routine health assessments may facilitate earlier detection and intervention. This is particularly relevant for older adults, as well as those with LTCs and disabilities who are most impacted, but also younger patients who, while less impacted, are also less likely to raise this issue with HCPs. In addition, other HCPs including nurses and pharmacists are well positioned to provide first-line advice on nocturia.²³ Policymakers should therefore explore strategies to enhance the role of nurses and pharmacists in nocturia screening and patient education.

Public health campaigns should also be developed to improve awareness of LUTS among the general population, as well as provide guidance on easy self-management practices and behaviours such as reducing fluid intake prior to bed, limiting the consumption of caffeinated beverages but also reducing salt intake. The impact of certain medications on nocturia should be discussed and assessed with patients and possibly revised to alleviate

symptoms. Given the reliance of many respondents on digital health resources, including NHS online platforms, these tools should be leveraged to provide evidence-based guidance on symptom recognition and self-management strategies. This said, non-digital options and interventions should also be developed and supported to reach groups with limited access to digital tools and resources.

Nocturia is associated with multiple comorbidities, including cardiovascular disease and sleep disturbances. Policymakers should recognise nocturia as a significant public health issue and integrate its assessment into national guidelines on ageing, chronic disease management and preventative healthcare strategies. By addressing these gaps, healthcare systems can improve early detection, optimise management pathways and ultimately enhance patient outcomes related to nocturia and other LUTS.

Given the strong association between nocturia and cardiovascular disease, hypertension and sleep disorders, failure to elicit nocturia in routine care represents a systematic missed opportunity for early detection of chronic disease. Further research should explore strategies to integrate nocturia assessment into routine clinical care and to develop targeted interventions that improve patient engagement in symptom management.

Study strengths and limitations

A key strength of this study is its large sample size and national scope. With over 2000 community-dwelling adults, it represents one of the largest contemporary UK surveys to examine public awareness, experience and sociodemographic patterning of LUTS, including nocturia. The study also extends beyond prevalence by simultaneously capturing symptom awareness, lived experience and perceived causes across storage, voiding and postmicturition domains.

The principal limitations of this study are concerned with its cross-sectional nature, which precludes the establishment of causal and temporal relationships between the factors examined, and the cohort of participants was skewed towards a younger population. Another important limitation derives from the sampling method. Non-probability convenience sampling and online-only administration restrict the generalisability of findings and introduce selection bias, as the sample is likely to over-represent younger, more educated and more digitally engaged adults. Given that nocturia prevalence increases markedly with age, this may result in underestimation of population-level nocturia prevalence and attenuate observed age-related associations. Future studies should consider employing probability sampling techniques to ensure a more representative sample of the general population, thereby enhancing the external validity of the results. In addition, making the survey only accessible online, potentially eligible participants with limited access to the internet and/or those less confident with digital technology were likely excluded, and their views were absent or at least under-reported. The voluntary nature of

the survey meant that respondents with an interest in or previous experience with the research topic might have been more likely to take part. Finally, the reliance on self-reported data, which may be subject to recall and social desirability biases, could differ from respondents' actual experiences and behaviours.

Conclusion

This study highlights the high prevalence of LUTS, particularly nocturia, variable awareness of their causes and limited healthcare engagement. Despite the impact of nocturia on quality of life, many affected individuals do not seek any advice and engagement with HCPs is relatively rare. Self-management practices could also be better supported, guided and encouraged among those affected. Addressing these gaps requires improved public awareness and enhanced clinician training to better integrate nocturia assessment and support its management as part of routine care. Future research should explore strategies to optimise early detection and intervention, ultimately improving outcomes for those affected.

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