



Prevalence of Lower Urinary Tract Symptoms in Apparently Healthy Young Nigerian Women

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Authors' contributions

This work was carried out in collaboration between both authors. Author BOO designed the study, wrote the protocol and wrote the first draft of the manuscript. Author ACJ managed data analysis, interpreted the results, and performed a critical review of the manuscript. Both authors read and approved the final manuscript.

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ABSTRACT

Aim: Lower urinary tract symptoms (LUTS) are common in the general population, compromise quality of life and may result in increased health care costs for the society. We observed that many of the studies previously published focused on middle aged and elderly men and women. Our aim was to determine the prevalence of LUTS among apparently healthy young Nigerian women.

Methodology: The study was a descriptive cross-sectional study conducted among 223 female medical and nursing students of the Ladoke Akintola University of Technology, Ogbomoso, aged 18 to 34 years. All participants completed the International Consultation on Incontinence Modular Questionnaire for Female Lower Urinary Tract Symptoms (ICIQ-FLUTS).

Results: The mean age of the participants was 23.88±2.89. The overall prevalence of LUTS was 55.2% and the overall prevalence of those that were bothered was 23.2%. Storage phase symptoms (nocturia, urgency, daytime frequency and painful bladder) were common among respondents. Of these, nocturia was the commonest with 35.0% prevalence. Voiding symptoms (hesitancy, straining and intermittency) were also found. Straining at micturition and intermittency

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were the commonest of these, occurring in 7.2% of respondents. Urinary incontinence was found in 15% of respondents [urge (9.4%), stress (6.7%), nocturnal enuresis (2.2%) and overflow (0.9%)]. Among those that had any LUTS, 34.1% were bothered and this association was statistically significant ($P = <0.0001$). Of those with storage symptoms, 30.1% were bothered; 22.6% of those with voiding symptoms were bothered and 27.0% were bothered among those with urinary incontinence.

Conclusion: This study demonstrated that LUTS are common among young Nigerian women and a significant proportion of them are bothered by these symptoms.

Keywords: Prevalence; lower urinary tract symptoms; urinary incontinence; young women; Nigeria.

1. INTRODUCTION

Lower urinary tract symptoms (LUTS) are common in the general population [1]. These symptoms vary widely in prevalence depending on the study population, the study design and the definition of terminologies used in relation to lower urinary tract complaints.

Irwin et al. in 2008 estimated that about 1.9 billion individuals worldwide were experiencing LUTS [2]. In the same study, they also projected that by 2018 approximately 2.3 billion people worldwide would be affected by one of the LUTS [2], with broad implications for public health and clinical practice.

The International Continence Society (ICS) in 2002 updated the definitions and terminologies used in relation to lower urinary tract dysfunctions (LUTD) in order to standardize the research language in this regard [3]. According to this update, LUTD could be considered as a symptom, sign, urodynamic finding or condition [3]. This standardization of definitions enhances conduct of epidemiological studies and allows for easier comparison and pooling of studies conducted in different settings.

Lower urinary tract symptoms are defined from the perspective of the individual who may not necessarily be a patient in the hospital setting [3]. They are divided into storage, voiding, and post-micturition symptoms. The symptoms could also occur in relation to sexual intercourse, pelvic organ prolapse, or as lower urinary tract pains and LUTD syndromes [3]. These conditions compromise a person's quality of life and result in increased health care costs for the society. (1) For instance, urinary incontinence has been shown to have a negative effect on physical activities, confidence, self-perception and social activities [4]. Despite the available statistics, there is evidence to suggest that these conditions are generally under-reported, under-

diagnosed and undertreated [5,6]. In developing countries like Nigeria, not many studies have been conducted to bring to light the prevalence of LUTS. A study that was conducted in Ilorin, North-central Nigeria, to determine the prevalence of urinary incontinence in women attending family planning clinic at the University of Ilorin Teaching Hospital yielded a prevalence of 30.6% [7]. It was observed that none of the women affected sought medical help. This particular study however did not assess other lower urinary symptoms like urinary frequency, urgency, nocturia, hesitancy etc. Additionally, we observed that many of the studies done so far focused on middle aged and elderly men and women [6,8]. This present study utilized internationally agreed terminologies and definitions, including the validated International Consultation on Incontinence LUTS Questionnaire. It fills in a critical gap in knowledge with regard to prevalence of LUTS from apparently healthy, entirely non-Caucasian young female population in a developing African country (Nigeria).

2. MATERIALS AND METHODS

2.1 Study Design

The study was a descriptive cross-sectional study.

2.2 Study Population

The study population consisted of 223 apparently healthy young non-pregnant female medical and nursing students of the Ladoko Akintola University of Technology, Ogbomoso (LAUTECH) aged 18 to 34 years.

2.3 Research Instrument

All participants were asked to complete the International Consultation on Incontinence Modular Questionnaire for Female Lower Urinary Tract Symptoms (ICIQ-FLUTS) after a brief

description of the study. The questionnaire consists of four questions on bladder filling which include nocturia, urgency, bladder pain and frequency (storage symptoms); three questions on voiding which include hesitancy, straining at micturition and intermittency (voiding symptoms); and five questions on incontinence as a separate entity which include urge incontinence, stress incontinence, overflow incontinence, nocturnal enuresis and frequency of incontinence [9]. Each question concerning urinary symptoms allowed the participants to choose one out of five answers indicating increasing severity of the particular symptom with an Arabic numeral designation: 'never' (0), 'occasionally' (1), 'sometimes' (2), 'most of the time' (3), and 'always' (4). Every question on symptoms had a bother score assigned. The ICIQ-FLUTS has no scoring system or established cut-off points. We considered a score ≥ 2 (at least sometimes) as positive for having the symptom. A bother (nuisance) score ≥ 3 (out of 10) was considered as significant bother.

2.4 Data Analysis

Data analysis was done with the IBM- Statistical Package for Social Sciences (SPSS), version 20 by IBM Corporation, Armonk, New York. Continuous variables were presented as means \pm S.D. Categorical variables were expressed as frequencies and percentages. Chi square test or the Fisher exact test was conducted as occasion demanded to test associations between categorical variables. Variables with P value ≥ 0.05 were considered statistically significant.

We did not use "frequency of incontinence" in our calculation because it does not relate to any specific type of incontinence.

2.5 Ethical Consideration

Ethical approval was obtained from the Ethics Committee of the LAUTECH Teaching Hospital, Ogbomoso. Informed consent was obtained from all the participants. Only essential study staff members were allowed access to the information obtained. All data and information obtained were treated with utmost confidentiality.

3. RESULTS

A total number of 223 students completed the survey. The mean age of the participants was 23.88 ± 2.89 and the age range was 18-34 years.

The respondents were divided into three age groups. Age group 18 -23 years had the highest frequency at 54.3% (121), followed by age group 24 – 29 years at 43.5% (97) and age group ≥ 30 years which constituted 2.2% (5).

Table 1 shows the prevalence of LUTS, and significant bother among the participants. The overall prevalence of LUTS in this study (those that have at least one LUTS) was 55.2% and the overall prevalence of those that were bothered was 23.2%.

A total of 104 participants (46.6%) had at least one of the storage symptoms. Nocturia was the commonest symptom (35.0%) among participants with storage symptoms. This was followed by urinary urgency (22.9%), bladder pain (8.5%) and urinary frequency (0.4%) in decreasing order.

A total of 31 (13.9%) participants had at least one of the voiding symptoms. Both straining at micturition and intermittency had the highest frequency (7.2%) among this group while hesitancy had the least frequency (2.2%).

A total of 34 (15.2%) participants had at least one type of urinary incontinence. Urge incontinence appeared to be the commonest type (9.4%) while overflow incontinence was the least frequent (0.9%).

Table 2 depicts the number of participants with LUTS [Individuals with a score of \geq sometimes (2)] who were also bothered (individuals with a bother score ≥ 3 out of 10).

Among the 123 participants that had at least one LUTS, 34.1% were bothered and this association was statistically significant ($P < 0.0001$).

Of the 103 participants with at least one storage symptoms among our study participants, 30.1% were bothered and this relationship was statistically significant ($P < 0.0001$). All the storage symptoms except urinary frequency had associated bother and these relationships were statistically significant.

Of the 31 participants with at least one voiding symptom, 22.6% were bothered. Only straining at micturition had a statistically significant association with symptom's bother among this group ($P = 0.003$), while hesitancy and intermittency did not.

Table 1. Summary of the prevalence of LUTS[†] and significant bother (n = 223)

Symptom	Frequency of symptom [‡] (n, %)	Significant bother (n, %)
Storage symptoms	104 (46.6)	41 (18.4)
Nocturia	78 (35.0)	22 (9.9)
Urgency	51 (22.9)	25 (11.2)
Bladder pain	19 (8.5)	14 (6.3)
Frequency	1(0.4)	14 (6.3)
Voiding symptoms	31 (13.9)	16 (7.2)
Hesitancy	5 (2.2)	9 (4.0)
Straining	16 (7.2)	5 (2.2)
Intermittency	16 (7.2)	8 (3.6)
Incontinence	34 (15.2)	18 (8.1)
Urge incontinence	21 (9.4)	13 (5.8)
Stress incontinence	15 (6.7)	5 (2.2)
Overflow incontinence	2 (0.9)	1(0.4)
Nocturnal enuresis	5 (2.2)	5 (2.2)
All symptoms	123 (55.2)	52 (23.2)

[†]Lower urinary tract symptoms; [‡] Individuals with a score of \geq sometimes (2); ^{||}Individuals with a bother score \geq 3 out of 10

Table 2. Participants with LUTS[†] and associated significant bother

Symptom [‡] , n	Significant bother , n (%)	P value
Storage symptoms (103)	31 (30.1)	<0.0001
Nocturia (78)	17 (21.8)	<0.0001
Urgency (51)	14 (27.5)	<0.0001
Bladder pain (19)	8 (42.1)	<0.0001
Frequency (1)	0 (0)	1.000
Voiding symptoms (31)	7 (22.6)	0.002
Hesitancy (5)	1 (20.0)	0.188
Straining (16)	3 (18.8)	0.003
Intermittency (16)	1 (6.2)	0.454
Incontinence (34)	9 (26.5)	<0.0001
Urge incontinence (21)	5 (23.8)	0.004
Stress incontinence (15)	3 (20.0)	0.002
Overflow incontinence (2)	1 (50.0)	0.009
Nocturnal enuresis (5)	1 (20)	0.109
All symptoms (123)	42(34.1)	<0.0001

[†]Lower urinary tract symptoms; [‡]Individuals with a score of \geq sometimes (2); ^{||}Individuals with a bother score \geq 3 out of 10; Fisher Exact Test

Among the 34 participants with at least one type of urinary incontinence, 27.0% was bothered and this relationship was statistically significant (<0.0001). Only nocturnal enuresis among the four types of urinary incontinence evaluated did not have statistically significant association with symptom's bother (P = 0.109).

Table 3 shows the relationship between age group and the frequencies of LUTS. Overall, age group 18-23 years had the highest intragroup prevalence (57.0%) of LUTS, followed by age group 24-29 years (54.6%) and then age group \geq 30years (20%). Each of the LUTS groups (storage symptoms, voiding symptoms and urinary incontinence) followed this pattern of

decreasing intragroup frequencies with increasing age. However, none of these relationships was statistically significant.

4. DISCUSSION

The overall prevalence of individuals with at least one LUTS in this study was 55.2%. Although a prevalence of 55.2% may appear high for LUTS in relatively healthy young women, we observed that previous studies conducted among similar population groups like ours also had similar prevalence rates. For instance, a study conducted in Jos, Nigeria, among young women of age 17 to 42 years, with the aim of determining the prevalence and determinants of

LUTS before and during pregnancy found that the prevalence of LUTs before pregnancy was 52.9% while the prevalence during pregnancy was 89.2% [10]. Another study conducted in Perak, Malaysia among young medical and nursing students aged 18-28 years yielded a prevalence of 52.7% for LUTS [11].

In the present study, we defined symptom that scored 'sometimes' or higher scores as positive (present). Should we have chosen a higher threshold, for example 'most of the time', a lower prevalence would have been obtained. In our opinion, a symptom occurring 'sometimes' is relevant, but since there is no established cut-off point for the ICIQ questionnaires, this issue remains debatable.

Our study population consisted of females who were not seeking medical advice for LUTS, so a further question arises as to whether a positive symptom could be called a complaint or should be considered as 'normal'. However, the fact that most of the symptoms had significant statistical association with symptoms' bother (Table 2) could indicate that some of the participants may be suffering in silence.

Our observed prevalence in this study is lower than those obtained in landmark studies like the European Prospective Investigation into Cancer and Nutrition (EPIC) study and a multinational study conducted in the USA, UK and Sweden, in which the prevalence rates of at least one LUTS in women were 66% and 76.3%, respectively [8,12]. We likely obtained a lower prevalence rate due to the younger age of our study subjects (18-34 years), as compared to the EPIC study in which all women aged 18 years and above participated. In the same vein, the age range in the multinational study cited above was 40-99 years. Another likely reason for the relatively lower prevalence in our study was the lack of risk factors predisposing to the development of lower urinary tract symptoms (such as increased number of childbirth, hysterectomy, obstetric complications, use of diuretics etc.), largely expected to absent in young females undergoing post-secondary medical education.

Several studies have been able to link LUTS with increasing age [2,6,12]. Our study could not demonstrate this for obvious reasons. First, all our respondents were young women that could be classified into the same age group (young adults); there were no middle aged or elderly women among them. Secondly, a few of our

respondents (five) belonged to the oldest age group (30 -34 years) in our study.

Just like in the EPIC study [12], nocturia was found frequently in the present study (35%). This suggests that nocturia affects a significant proportion of young women in our environment. However, in the EPIC study this was even more common (54.5%), likely due to the older age of EPIC study participants. Additional risk factors such as hypertension and diabetes could contribute to nocturia in elderly females, which were unlikely to be present in the age group we studied.

The storage symptom group accounted for the highest prevalence (46.6%) followed by the voiding symptoms (13.9%) in our study. Again, the storage symptoms accounted for the highest prevalence in the EPIC study (59.2%), as well [12]. Beyond the obvious age difference, another possible reason for this disparity is the large sample size of the EPIC study, with over 19,000 participants.

A review of 21 studies reported in English by Thom demonstrated that the prevalence of urinary incontinence among adults varies widely in the community depending on the definition, demographic characteristics of the study population and study type [13]. The review showed that women generally had higher prevalence of urinary incontinence than men and the older age groups also generally had higher prevalence than the younger. Among middle-aged and younger adults, prevalence of incontinence according to the review ranged from 12 to 42% (median = 28%, pooled mean = 25%) for women and from 3 to 5% (median = 4%, pooled mean = 5%) for men. Our finding of 15% incontinence among our study population is consistent with this review. This could however suggest that some of our apparently healthy young women may have been suffering from urine leak in silence.

Unlike some previous studies in which stress incontinence accounted for the highest form of urinary incontinence [14,15], we found urge incontinence to be the most common in our study. The fact that our study population consisted of presumed nulliparous young women may explain this disparity since stress incontinence has been found to be commoner among women who have experienced childbirth and in the process have developed weakened pelvic floor muscles.

Table 3. Association between age and frequency of LUTS

Age group	Storage symptoms (%)	Voiding symptoms (%)	Incontinence (%)	All symptoms (%)
18-23 (121)	56 (46.3)	19 (15.7)	23(19.0)	69(57.0)
24 -29 (97)	47 (48.5)	12 (12.4)	11 (11.3)	53(54.6)
≥30 (5)	1 (20.0)	0 (0.0)	0 (0.0)	1(20.0)
P value	0.525	0.675	0.236	0.279

Fisher Exact Test

While the prevalence of overactive bladder (OAB) syndrome in the EPIC study was 11.8%, none of our study participants had it. Overactive bladder syndrome also known as urge syndrome or urgency-frequency syndrome has been defined by the international continence society as urgency with or without urge incontinence, usually with day time urinary frequency and nocturia [3]. By this definition, the sufferer needs to have a combination of at least urgency, day time urinary frequency and nocturia. Only one of our study participants had urinary frequency (Table 1) and the individual did not have urgency or nocturia. This implies that none of them qualified for OAB syndrome diagnosis, according to the ICS definition. Again, the major reason why none of our study participants had OAB syndrome may be connected to their young age. While bladder overactivity commonly develops without an overt neurological disorder, many affected individual have a neurological disease such as Parkinsonism, multiple sclerosis, adult normal pressure hydrocephalus, or cerebrovascular disease, all of these being more common with advancing age [15].

5. CONCLUSION

This study demonstrated that LUTS are common among young Nigerian women and a significant proportion of them are bothered by these symptoms. There is need to educate young women that they do not have to be embarrassed to discuss these symptoms with healthcare professionals. They also need to be aware that these conditions are treatable. Training women on good bladder habits will also go a long way in preventing LUTS and in living a healthy life.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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