

Original research

Non-pathological lower urinary tract symptoms in late pregnancy in Teaching Hospital, Anuradhapura, Sri Lanka

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Lower urinary tract symptoms (LUTS) can frequently be seen in pregnant women and adversely affect their quality of life (QoL). This study was conducted to assess the prevalence of LUTS in late pregnancy and compare them between nulliparous and multiparous women admitted to teaching hospital, in Anuradhapura, Sri Lanka.

Methodology

This descriptive cross-sectional study was carried out in a total of 455 pregnant women aged between 19 to 42 years admitted to the antenatal ward, professorial unit, teaching hospital Anuradhapura, Sri Lanka. International Consultation for Incontinence Questionnaire (ICIQ)-FLUTS was used to assess the prevalence of LUTS among pregnant women.


Results

The mean age and gestational age of the participants were 28.74 ± 5.44 years and 37.29 ± 1.61 weeks respectively. The most commonly reported LUTS was nocturia (33.4%) followed by hesitancy (25.7%), straining (24.2%), and frequency (23.5%) whereas less than 20% reported bladder pain, dysuria, intermittency, and urinary incontinence. All assessed LUTS except nocturia and frequency were significantly more prevalent within multiparous than nulliparous women.

Conclusion

Though in the Sri Lankan context, we are not paying much attention to non-pathological LUTS, clinicians/obstetricians should pay special attention aiming to improve the QoL among pregnant women.

Keywords: Lower urinary tract symptoms, LUTS, Late pregnancy, Nulliparous, Multiparous

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Introduction

Pregnancy is a physiological process that entails several multisystem changes. The pathological conditions may appear during pregnancy such as Urinary tract infections (UTIs), gestational diabetes leads to confusion of the clinical presentation [1]. It is not easy sometimes to separate symptoms which occurs due to physiological changes in pregnancy such as increased progesterone level, reduction in functional urethral length and reduced maximum urethral closure pressure from symptoms due to pathological conditions [2].

Lower Urinary Tract Symptoms (LUTS) is a global term that encompasses all urinary symptoms, including storage, voiding, and post-micturition symptoms among both sexes [3]. Millions of women throughout the world are afflicted, and there has been a growing interest in these symptoms in recent years as a consequence of the increased awareness of the human and social implications for the individual sufferer [4].

Pregnancy-related LUTS account for a significant amount of urinary distress and can have detrimental effects on health-related quality of life (QoL) [5–8]. Nevertheless, the social stigma prevents many women from seeking treatment [9]. LUTS were reported to be more prevalent and were moderately or severely bothered during than after pregnancy [10]. The most common LUTS during pregnancy were frequency (77%), followed by nocturia (75.6%), stress urinary incontinence (SUI) (51.1%), incomplete emptying (43.7%), dysuria (17.8%), urgency incontinence (UI) (10.4%) [11]. Another study reported nocturia as the most commonly reported symptom during pregnancy and they emphasized that LUTS were much less prevalent after childbirth than during pregnancy [12]. SUI and UI are more prevalent among multiparous women than nulliparous women which enriches the fact from previous studies [11–13]. LUTS can have negative effects on the social, physical, and emotional well-being of pregnant women [14]. Few reports have been conducted to date to assess the impact of LUTS during pregnancy [9,10,13].

Several reports have been published in order to identify and manage these symptoms early in pregnancy, such as antenatal urinary incontinence screening, health education regarding risk factors for urinary incontinence, and highlighting the importance of early recognition and management [5].

In clinical practice, the prevalence of LUTS in pregnancy is high and it can exacerbate the discomfort and suffering within pregnant women. These LUTS are usually considered normal and temporary parts of pregnancy, however, occasionally those lead to mask the real pathological conditions such as urinary tract infections (UTIs), gestational diabetes, and other issues that might manifest with urinary symptoms among pregnant women.

It is not uncommon to seek medical advice for LUTS by pregnant women as they are really troublesome for them. Therefore, healthcare professionals must be more aware of most prominent LUTS among pregnant women, and their impact on pregnancy in order to manage consequences of LUTS effectively.

The objective of this study is to assess the prevalence of LUTS during late pregnancy and compare them between nulliparous and multiparous women admitted to Teaching Hospital, Anuradhapura, Sri Lanka.

Methodology

This descriptive cross-sectional study was conducted in Teaching Hospital Anuradhapura from March 2022 to May 2022. Pregnant women who admitted to the antenatal ward, professorial unit, teaching hospital, Anuradhapura after completing 34 weeks of gestation were included for the study. The patients in labor, those with medical disorder of pregnancy, diagnosed urinary tract infection on admission and those with history of urinary tract or pelvic surgery were excluded. Ethical approval from the Ethics Review Committee of Faculty of Medicine and Allied Sciences, Rajarata University of Sri Lanka (ERC Ref. No ERC/2021/54) was taken before the initiation of data collection. Convenience sampling method was used to collect the sample. The written consent was obtained from the participants and the confidentiality was maintained throughout the study.

The sample size is calculated using following formula.

$$n = (Z^2 P(1-P)) / d^2$$

The letter “n” represents the sample size, “Z” represents the statistic corresponding to level of confidence ie.95% CI = 1.96, “P” represents the expected prevalence and letter “d” represents the precision (=0.05).

Calculation:

Assumptions are made as prevalence = 50.1%

$$n = 1.96 \times 1.96 \times 0.5 \times 0.5 / (0.05)^2$$

$$= 385$$

After adjusting for 10% nonresponse rate, the needed minimal sample size was 424. We collected data from 455 pregnant women. The study was interviewer administered and trained assistants were collected data using the commonly used questionnaire for monitoring and recording LUTS among females; International Consultation for Incontinence Questionnaire (ICIQ)-FLUTS. Twelve questions to detect three categories of LUTs were included in the questionnaire. Data were analysed using the statistical package for social sciences (SPSS) version 25 for windows.

Results

This study assessed the prevalence of LUTS among late pregnant women. A Total of 459 women were reached and 4 of them did not consent to participate for the study. A total sample of 455 pregnant women who were admitted to antenatal ward, teaching hospital, Anuradhapura were included in this study. The response rate was 99.1% and results are presented under three sections as basic characteristics of the sample, prevalence of LUTS and comparison of LUTS between nulliparous and multiparous women.

1. Basic characteristics of pregnant women

The total number of participants were 455 and the mean age of the sample is 28.74 ± 5.44 years. The age ranged from 19 years to 42 years. The mean period of gestation (POG) was 37.29 ± 1.61 , majority were multiparous (65.3%) and most of them vaginally delivered in the previous pregnancy (Table 1).

2. Prevalence of LUTS among pregnant women

Table 2 shows the prevalence of different LUTS among women during late pregnancy. A commonly adhered definition of urinary frequency is voiding more than seven times during the day and nocturia is more than once per night [15]. Frequency and Nocturia prevalence assessments were done accordingly. The majority reported nocturia (33.4%) and less than 20% reported dysuria, bladder pain, intermittency and Urgency Incontinence (UI).

3. Comparison of LUTS between nulliparous and multiparous women

The majority of LUTS were significantly prevalent among multiparous women. Nocturia and Frequency were prevalent in higher percentages within multiparous (36%, 25.9%) than nulliparous (28.4%,

18.9%) women but there were no significant differences alike other LUTS (Table 3).

Table 1: Basic characteristics of pregnant women

Characteristics	Categories	Prevalence (%) N = 455
Age	< 21 y	10 (2.2)
	21-30 y	280 (61.6)
	31-40 y	163 (35.8)
	> 40 y	2 (0.4)
Parity	Nulliparous	158 (34.7)
	Multiparous	297 (65.3)
Mode of delivery in previous pregnancy among multiparous women	Vaginal	214 (47.0)
	LSCS	83 (18.2)

Table 2: Prevalence of LUTS among pregnant women

LUTS	Prevalence (%) N = 455
Nocturia	152 (33.4)
Hesitancy	117 (25.7)
Straining	110 (24.2)
Frequency	107 (23.5)
Dysuria	72 (15.8)
Bladder pain	79 (17.4)
Intermittency	83 (18.3)
Urgency Incontinence (UI)	75 (15.7)
Stress Urinary Incontinence (SUI)	42 (8.8)
Mixed Urinary Incontinence (MUI)	28 (5.9)

Table 3: Comparison of LUTS between nulliparous and multiparous women

LUTS	Prevalence among nulliparous women (%) (N = 158)	Prevalence among multiparous women (%) (N = 297)	P value* (chi-square)
Nocturia	45 (28.4)	107 (36)	0.105
Hesitancy	8 (5.1)	109 (36.7)	<0.001
Straining	7 (4.4)	103 (34.7)	<0.001
Frequency	30 (18.9)	77 (25.9)	0.097
Dysuria	1 (0.6)	71 (23.9)	<0.001
Bladder pain	13 (8.2)	66 (22.2)	<0.001
Intermittency	4 (2.5)	79 (26.6)	<0.001
Urgency Incontinence	6 (3.7)	69 (23.2)	<0.001
Stress urinary incontinence	2 (1.2)	40 (13.4)	<0.001
Mixed urinary incontinence	2 (1.2)	26 (8.7)	0.002

*Significance level ≤ 0.05

Discussion

The results of this study demonstrated how common LUTS are reported in pregnancy. Nocturia was the most prevalent LUTS among pregnant women of this study followed by hesitancy straining, frequency whereas less than 20% reported bladder pain, dysuria, intermittency and three types of urinary incontinence. These findings were supported by several studies [10,12,16–18]. Conversely Sun *et al.* found that the most common LUTS during pregnancy are frequency (27.8%) and SUI (46.1%) [11]. All the types of LUTS assessed in this study were more prevalent among multiparous women than null-parous women, which was emphasized in previous studies and those studies suggest this difference may be due to changes resulting from previous delivery [19]. Multiparous women are more prone to LUTS as their pelvic floor has damaged by previous delivery itself or pelvic floor trauma due to delivery interventions leading to poor support to the urethra and also compression effect of the gravid uterus. Pelvic floor damages have been demonstrated by magnetic resonance imaging during the first trimester [12,20].

Among three types of urinary incontinence, urgency incontinence (15.7%) was more prominent among pregnant women than stress urinary incontinence (8.8%) and mixed urinary incontinence (5.9%). Following the literature, there was a significantly higher prevalence of stress urinary incontinence and urgency incontinence in multiparous than in the nulliparous women in a study conducted in Taiwan [12] and a Turkey study highlighted that prevalence of SUI was significantly higher in multiparous women than nulliparous women [21]. In another study they reported that UI prevalence in multiparous women was 3.3 times higher than nulliparous women [22]. Like other assessed LUTS, nocturia and frequency do not show a significant prevalence among multiparous women than nulliparous women, which may most probably be due to pregnancy-induced rather than parity, and similar findings were reported in the Taiwan study as well [12].

In this study, the recruited sample size is more than the recommended sample size. Increasing the sample size beyond the minimum requirement will enhance the ability to detect smaller effects and reduce the margin of error in the estimates and it improve the external validity of the study by providing a more representative sample which may help in generalizing the study findings to a broader population. Therefore our study

has a certain level of statistical power and precision to draw meaningful and reliable conclusions. There were no LUTS-related studies done in the Sri Lankan context, so this study will be a good initiation to minimize the knowledge gap.

Among the limitations, this cross-sectional study did not focus on exploring the risk factors of such LUTS, therefore it didn't allow for a causal interpretation. In the present study we aimed to determine the prevalence of LUTS during pregnancy and to compare them within nulliparous and multiparous women. Thus, we believe that our study adds evidence to the literature about LUTS during pregnancy in Sri Lanka and further longitudinal studies are required to assess the status of LUTS among pregnant women to ascertain a more accurate assessment on LUTS, LUTS-related intervention, and its impact on QoL during pregnancy.

It is important to view LUTS among pregnant women from a broader perspective as it is common within them and has a negative impact on their QoL. LUTS affect the comfort and well-being of the mother as well as the foetus. However, LUTS cannot be prevented as they occur due to the ongoing pregnancy and LUTS get worse with increasing number of pregnancies. Recognition of pathological symptoms from LUTS is needed to treat the underlying pathological condition to avoid the adverse maternal effects on pregnant women.

It is practically difficult to differentiate pathological symptoms from non-pathological LUTS. It is the ability of the clinician to predict real pathological symptoms from LUTS and if necessary to investigate and give appropriate treatment.

In the Sri Lankan context (a large number of pregnant patients are managed with minimum facilities) though clinicians consider pathological symptoms and take appropriate investigations and treatments, non-pathological LUTS are frequently overlooked. This can lead to suffering women during late pregnancy and it is needed to recommend awareness of these symptoms of pregnant women to meet antenatal care providing clinical staff in their routine pregnancy care. Improving medical care through offering appropriate guidance, and ensuring the well-being of both the mother and the developing baby is very crucial in this issue. Conducting more research on this aspect and exploring more related things which support for healthcare providers to intervene promptly to enhance the overall pregnancy experience is a timely need.

Conclusion

Nocturia was the most common LUTS among pregnant women in Sri Lanka followed by hesitancy, straining, frequency, bladder pain, dysuria, intermittency and urinary incontinence. The prevalence rates of all LUTS increased with multiparity except for nocturia and frequency. LUTS has not been studied previously in Sri

Lanka, this study findings are as same as the existing literature, which might affect significantly the QoL of pregnant women. In the Sri Lankan context though LUTS are overlooked due to clinical work overload, clinicians/obstetricians should need to pay special attention on LUTS aiming to improve the QoL among pregnant women.

References

1. Soma-Pillay P, Nelson-Piercy C, Tolppanen H, Mebazaa A. Physiological changes in pregnancy. *Cardiovasc J Afr.* 2016;27:89–94. Available from: DOI: 10.5830/CVJA-2016-021
2. Uzelpasaci E, Çinar GN, Baran E, Gürşen C, Nakip G, Ozgul S, et al. Trimester-based changes in urogenital symptoms and their impact on the quality of life in pregnant women: A preliminary report. *Curr Urol.* 2021;15:167–71. Available from: <http://dx.doi.org/10.1097/CU9.0000000000000021>
3. Abrams P. New words for old: lower urinary tract symptoms for “prostatism.” *BMJ.* 1994; 308(6934): 929-30.
4. Milsom I. Lower urinary tract symptoms in women. *Curr Opin Urol.* 2009;19:337–41. Available from: doi: 10.1097/MOU.0b013e32832b659d
5. Yusoff DM, Awang B, Kueh YC. Urinary incontinence among pregnant women attending an antenatal clinic at a tertiary teaching hospital in North-East Malaysia. *J Taibah Univ Med Sci [Internet].* 2018;14:39–46. Available from: DOI: 10.1016/j.jtumed.2018.11.009
6. Zhang L, Zhu L, Xu T, Lang J, Li Z, Gong J, et al. A population-based survey of the prevalence, potential risk factors, and symptom-specific bother of lower urinary tract symptoms in adult Chinese women. *Eur Urol [Internet].* 2015;68:97–112. Available from: <http://dx.doi.org/10.1016/j.eururo.2014.12.012>
7. Ho LY, Chu PS-K, Consigliere DT, Zainuddin ZM, Bolong D, Chan CK, et al. Symptom prevalence, bother, and treatment satisfaction in men with lower urinary tract symptoms in Southeast Asia: a multinational, cross-sectional survey. *World J Urol.* 2018;36:79–86. Available from: doi:10.1007/s00345-017-2097-2
8. Chapple C, Castro-Diaz D, Chuang YC, Lee KS, Liao L, Liu S-P, et al. Prevalence of lower urinary tract symptoms in China, Taiwan, and South Korea: Results from a cross-sectional, population-based study. *Adv Ther.* 2017;34:1953–65. Available from: doi:10.1007/s12325-017-0577-9
9. Bradway C, Coyne KS, Irwin D, Kopp Z. Lower urinary tract symptoms in women - A common but neglected problem. *J Am Acad Nurse Pract.* 2008;20:311–8. Available from: doi:10.1111/j.1745-7599.2008.00329.x
10. Li Z, Xu T, Zhang L, Zhu L. Prevalence, potential risk factors, and symptomatic bother of lower urinary tract symptoms during and after pregnancy. *Low Urin Tract Symptoms.* 2019;11:217–23. Available from: <https://doi.org/10.1111/luts.12274>
11. Sun MJ, Chen GD, Chang SY, Lin KC CS. Prevalence of lower urinary tract symptoms during pregnancy in Taiwan [Internet]. *J Formos Med Assoc.* 2005 [cited 2023 Aug 28]. p. 185–9. Available from: <https://pubmed.ncbi.nlm.nih.gov/15818433/>

12. Lin KL, Shen CJ, Wu MP, Long CY, Wu CH, Wang CL. Comparison of low urinary tract symptoms during pregnancy between primiparous and multiparous women. *Biomed Res Int.* 2014;2014:8–12. Available from: <http://dx.doi.org/10.1155/2014/303697>
13. Ahmad QT, Saffarini JH, Samara AM, Jabri DS, Safarini ZH, Banijaber YM, et al. The impact of lower urinary tract symptoms on the quality of life during pregnancy: a cross-sectional study from Palestine. *BMC Urol [Internet].* 2020;20:1–10. Available from: <https://doi.org/10.1186/s12894-020-00761-9>
14. Van der Vaart CH, De Leeuw JRJ, Roovers J-PWR, Heintz APM. Measuring health-related quality of life in women with urogenital dysfunction: The urogenital distress inventory and incontinence impact questionnaire revisited. *Neurourol Urodyn.* 2003;22:97–104. Available from: DOI 10.1002/nau.10038
15. Lukacz ES, Whitcomb EL, Lawrence JM, Nager CW, Luber KM. Urinary frequency in community-dwelling women: What is normal? *Am J Obs Gynecol.* 2009;23:1–7. Available from: doi:10.1016/j.ajog.2008.11.006
16. Aslan D, Aslan G, Yamazhan M, Ispahi Ç, Tinar Ş. Voiding symptoms in pregnancy: An assessment with international prostate symptom score. *Gynecol Obstet Invest.* 2003;55:46–9. Available from: DOI: 10.1159/000068957
17. Mourad S, Shokeir A, Ayoub N, Ibrahim M, Reynolds N, Donde S, et al. Prevalence and impact of lower urinary tract symptoms: Results of the epic survey in Egypt. *Neurourol Urodyn.* 2018;38:637–43. Available from: DOI: 10.1002/nau.23875
18. Adaji SE, Shittu O, Bature S, Nasir S, Olatunji O. Bothersome lower urinary symptoms during pregnancy: A preliminary study using the international consultation on incontinence questionnaire. *Afr Health Sci.* 2011;11. Available from: 10.4314/ahs.v11i3.70070
19. Botelho S, da Silva JM, Palma P, Herrmann V, Riccetto C. Can the delivery method influence lower urinary tract symptoms triggered by the first pregnancy? *Int Braz J Urol.* 2012;38:267–76. Available from: 10.1590/S1677-55382012000200016
20. Dietz HP. Pelvic floor trauma following vaginal delivery. *Curr Opin Obstet Gynecol.* 2006;18:528–37. Available from: DOI: 10.1097/01.gco.0000242956.40491.1e
21. Balik G, Güven ES, Tekin YB, Şentürk Ş, Kağitci M, Üstüner I, et al. Lower urinary tract symptoms and urinary incontinence. *Low Urinary Tract Symptoms.* 2014;8:120–4. Available from: <https://doi.org/10.1111/luts.12082>
22. Hansen BB, Svare J, Viktrup L, Jørgensen T, Lose G. Urinary incontinence during pregnancy and 1 year after delivery in primiparous women compared with a control group of nulliparous women. *Neurourol Urodyn.* 2012;32:475–80. Available from: DOI 10.1002/nau.21221



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