



Epidemiological Profile and Attitudes of Pregnant Women Toward Urinary Incontinence: A Single-Center Cross-Sectional Study

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Received: 23 October 2023 / Accepted: 8 December 2023 / Published online: 8 January 2024
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Abstract

Objective The objective was to highlight the epidemiological and clinical profile of urinary incontinence in pregnant women during the first trimester and to determine their knowledge and attitudes toward this condition in Kinshasa.

Methods We carried out a descriptive cross-sectional study among 127 pregnant women who came for prenatal consultations in the first trimester from January to March 2022 at the LISANGA Medical Centre in Kinshasa. A questionnaire was developed containing the Urinary Symptom Profile (USP) scale. Kolmogorov–Smirnov normality tests were used to determine the normality of the distribution of the study variables. Inferential statistics were performed.

The significance level was 0.05.

Results The mean age was 29.7 ± 5.5 years. Thirty-eight women (29.9%) were primigravida. The median age of pregnancy was 6 weeks of amenorrhoea. The prevalence of urinary incontinence was 73.2%, with 31.2% of urge urinary incontinence and 16.1% of stress incontinence. In 61.4% of cases, overactive bladder was associated with urinary incontinence. Among the incontinent pregnant women, 3.2% had consulted a doctor while accepting that this condition is a health problem, 13.4% knew they had a pelvic floor muscle, 4.7% had knowledge of its rehabilitation, and 8.7% had benefited from gymnastics during pregnancy.

Conclusions Urinary incontinence was frequent in the first trimester of pregnancy with a predominance of urgency. It was hardly discussed during prenatal consultations and pregnant women were not aware of the pelvic floor muscle, its rehabilitation, and of gymnastics during pregnancy.

Keywords Kinshasa · Knowledge · Pelvic floor muscle · Pregnant women · Urinary incontinence

Introduction

Urinary incontinence (UI), defined by the International Continence Society (ICS) as involuntary loss of urine, is one of the most important urological conditions in women. It is a

Handling Editor: G. Alessandro Digesu

Editor in Chief: Maria A. Bortolini

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condition that can occur at any time in life and has a wide range of etiologies [1].

During pregnancy, 20–67% of women suffer from UI [2, 3]. Studies carried worldwide on the prevalence of UI during this period are numerous and rates may vary due to methodology, variations in definitions of UI, questionnaires used, and the stage of pregnancy at which the data were collected [4, 5].

According to some authors, its prevalence increases over the course of pregnancy and is also very high, peaking in the third trimester of pregnancy at around 26.7% to 65.1% [2, 6].

In the Democratic Republic of Congo (DRC), there is a lack of published epidemiological and clinical data on female urinary incontinence [7], both in the general population and in pregnant women in particular. The condition remains under-diagnosed in the clinical setting for all women with a prevalence of 1.3% in Kinshasa because health professionals do not address these issues [7] even during prenatal consultations. A survey by Maroyi et al. in 2021 conducted in South Kivu reports that the prevalence of UI was 33% among pregnant women [8].

Given that the majority of pregnant women come into contact with a health professional for the first time to begin medical monitoring in the first trimester of their pregnancy, we decided to conduct this study with the objective of highlighting the epidemiological and clinical profile of UI in pregnant women in the first trimester and determining their knowledge and attitudes toward this condition in Kinshasa.

Methodology

Design, Setting, and Study Population

We carried out a descriptive cross-sectional study among 127 pregnant women who came for prenatal consultations during the period from January to March 2020 at the LISANGA medical center in Kinshasa. The study included woman with active pregnancy of 12 weeks of amenorrhea or less and who has agreed to participate in the present study without associated diseases known.

Methods of Collecting Information

A questionnaire was developed to collect the study data containing the following variables: age of pregnant woman, age of pregnancy, parity, birth weight of the first and large babies, mode of delivery, history of pelvic surgery, and constipation. In addition, variables from the Urinary Symptom Profile (USP) scale are included.

The USP is a validated scale developed in 2005 by the French Association of Urology. It is used to define the types of UI and dysuria experienced by patients. Its items focus

on the frequency and intensity of urinary symptoms over the past four weeks. It consists of 13 items that allow the determination of a score which has been correlated to the voiding schedule [9]:

- Three items for SUI: score from 0 to 9 by taking the sum of items 1a + 1b + 1c;
- Seven items for overactive bladder (OAB), including one item dealing with UUI: score from 0 to 21 by taking the sum of items 2 + 3 + 4 + 4bis + 5 + 6 + 7;
- Three items for dysuria: score from 0 to 9 by adding items 8 + 9 + 10.

Ethical Considerations

An application for full ethical approval was submitted to the Ethics Committee of the School of Public Health, Faculty of Medicine, University of Kinshasa - DR Congo and ethical consent was received on 17 September 2019. The ethical approval number is ESP/CE/236/2019.

Statistical Analysis

Kolmogorov–Smirnov normality test was used to determine the normality of the distribution of the main variables.

For normally distributed variables ($p > 0.05$), Student's t-test was used to compare the means. For non-normally distributed variables ($p \leq 0.05$), the Mann–Whitney U test was used to compare the medians of the independent variables, and the Spearman correlation and chi-square test were used to test relationships between variables. The odds ratio was calculated to determine the risk factors for UI exposure. The significance level was 0.05.

Results

The age of the pregnant women ranged from 18 to 43 years with an average of 29.7 ± 5.5 years. Among the 127 pregnant women surveyed, 38 women (29.9%) were primigravida, while 89 women (70.1%) were in their 2nd to 8th pregnancy. The median age of pregnancy was 6 weeks of amenorrhea. The average birth weight of the first baby was 3196.1 grams, and the average birth weight of the large baby was 3479.6 grams (Table 1).

Among the history of pelvic surgeries, we noted appendectomy (22%), ovarian cystectomy (11.8%), myomectomy (1.6%), and hysterectomy (1.6%). Constipation was present in 35.4% (Table 2).

Of the 89 pregnant women who had already given birth, 83.1% had only vaginal delivery and 4.5% had only caesarean section. Episiotomy was performed in 50.6% (Table 2).

Table 1 Mean±standard deviation (median) of study variables

Variables	Mean±SD/ median±SEM	Min–Max	95% CI
All pregnant women (N = 127)			
Age of the pregnant women (years) Mean±SD	29.4±5.3	18–43	28.5–30.4
Age of pregnancy (WA)	6±0.1	3–12	6.1–6.7
Number of pregnancies	2±0.1	1–8	2.3–2.9
Previous delivery (N=89)			
Number of children	1±0.1	0–7	1.3–1.8
Birth weight of 1 st baby (gr)	3100±65.2	1500–5000	3066.5–3325.7
Birth weight of large baby (gr)	3300±69.4	2350–5900	3341.5–3617.6

SD, standard deviation; WA, week of amenorrhea; SEM, standard error mean

Table 2 Clinics of surveyed pregnant women

Variables	n	Percentage
Medical history (N = 127)		
Ovarian cystectomy	15	11.8
Appendectomy	28	22
Myomectomy	4	3.2
Constipation	45	35.4
Previous mode of delivery (N = 89)		
Vaginal delivery	74	83.1
Caesarean section	4	4.5
Vaginal section and caesarean section	11	12.4
Episiotomy (N = 89)	45	50.6
Frequency of UI (N = 127)		
pregnant women with UI	93	73.2
Pregnant women without UI	34	26.8
Types of UI (N = 93)		
Stress urinary incontinence	15	16.1
Urge urinary incontinence	29	31.2
Mixte urinary incontinence	49	52.7
Enuresis (N = 127)	28	22
Dysuria (N = 127)	47	37
Overactive bladder (OAB)	127	100
OAB with UI	78	61.4

The prevalence of UI in pregnant women was 73.2%. The types of UI (n = 93) found were MUI (52.7%), UUI (31.2%), and SUI (16.1%). Nocturnal enuresis was present in 22% and dysuria in 37%. All pregnant women had an overactive bladder, and 61.4% of this OAB was associated with UI (Table 2).

Incontinent pregnant women had significantly more overactive bladder (8.9 vs. 5.7; $p = 0.000$) and dysuria (0.8 vs. 0.3; $p = 0.005$) than continent pregnant women (Table 3).

Previous delivery did not cause more UI in the surveyed pregnant women (75.3% vs. 68.4%; $p = 0.424$) and urinary frequency was identical in both groups of pregnant women ($p = 0.240$) (Table 3).

The OAB score was positively correlated with the age of pregnancy ($r = 0.197$; $p = 0.026$) and with diurnal voiding frequency ($r = 0.324$; $p = 0.000$). Overactive bladder was also associated with amount of urine leakage (chi-square: 27.672; $ddl:3$; $p = 0.000$). The frequency of urination increased significantly with the age of pregnancy ($r = 0.195$; $p = 0.028$).

Table 4 shows 7.9% of the pregnant women reported that physicians discussed UI during prenatal consultations, and 3.2% of the incontinent pregnant women had consulted for their UI while accepting that this condition is a health problem (Table 4).

Of all these pregnant women, 13.4% recognized they had perineum and only 4.7% had recognized the existence of its

Table 3 Means comparison of variables between pregnant women with and without UI

Variables	With UI (N = 93)	Without UI (N = 34)	Statistics
Overactive bladder score (SD)	8.9 (3.3)	5.7 (2.3)	t student ($p = 0.000$)
Dysuria score; mean (SD)	0.8 (1.1)	0.3 (0.7)	U Mann–Whitney ($p = 0.005$)
Dysuria; n (%)	37(78.7)	10(21.3)	OR = 3.5 [95%IC 1.543–8.029] ($p = 0.002$)
Daytime voiding frequency; mean (SD)	5.5(2.2)	4.9(1.9)	U Mann–Whitney ($p = 0.240$)
women who gave birth vs women who not gave birth; %	75.3 vs 68.4	24.7 vs 31.6	OR = 1.4 [95%IC 0.609–3.245] ($p = 0.424$)

Table 4 Pregnant women's knowledge and attitudes toward urinary incontinence

Variables	Pregnant women with UI (N = 93)		Pregnant women without UI (N = 34)		Total (N = 127)	
Accepter qu'avoir l'IU est un problème de santé	3	3.2	–	–	–	–
Avoir consulté pour IU	3	3.2	–	–	–	–
Abord de l'IU par le médecin lors des CPN	9	9.7	1	2.9	10	7.9
Connaissance sur le périnée	13	14	4	11.8	17	13.4
Connaissance sur la rééducation pelvipérinéale	5	5.4	1	2.9	6	4.7
Connaissance sur la Gymnastique prénatale	53	57	19	55.9	72	56.7
Avoir bénéficié de la gymnastique prénatale	10	11	1	2.9	11	8.7

CPN, consultations prénatales

rehabilitation. And 56.7% have heard of prenatal gymnastics; however, only 8.7% had benefited from it (Table 4).

Discussion

Prevalence and Symptomatology

Pregnancy is responsible for physiological changes in the urinary tract, characterized by the presence of urinary frequency, urgency, stress incontinence, voiding difficulties [3], and nocturia [10].

UI is considered to be the most common symptom of pelvic floor dysfunction. Studies indicate a prevalence of 21% to 85% during pregnancy [11, 12]. Although this value is high in our series (73.2%), it is within the range found in the literature. It should be noted that this prevalence increases with the term of the pregnancy [2, 6].

As for the types of UI, several studies report that during pregnancy the predominant type of UI is SUI with a prevalence varying between 20% and 75% and tends to increase with gestational age [3, 4]. MUI is the second most common type of UI followed by UUI [5].

In contrast to this literature, the results of the present study corroborate those of Maroyi's study (2021) conducted in the same setting with a predominance of UUI over SUI, although MUI is the most common. The only difference between these two studies is the period of pregnancy studied [8].

This high rate of UUI can be explained by the fact that all pregnant women had an overactive bladder (OAB), and 61.4% of this OAB were associated with UI. The OAB score was significantly higher in incontinent women than continent women with pregnancy. OAB was positively correlated with age of pregnancy and daytime voiding frequency, and was also associated with amount of urine leakage.

It should be noted that OAB is a common clinical syndrome, defined by the International Continence Society (ICS) as a complex of several symptoms belonging to the

group of irritative disorders of the lower urinary tract such as the occurrence of urgency with or without urinary incontinence, usually associated with urinary frequency or nocturia [13]. These symptoms of OAB during pregnancy are due to normal physiological changes and disappear after delivery [14].

Van Brummen et al. reported that the prevalence of frequent and urgent voiding at 12 weeks of pregnancy was very high (74% and 63%, respectively), and the prevalence of AOB was significantly higher at 36 weeks than 12 weeks of pregnancy [15]. The present study also found that urinary frequency increased significantly with increasing pregnancy age ($r = 0.195$; $p = 0.028$) and nocturnal enuresis in 22% of pregnant women may be a consequence of nocturia.

Urgency, daytime pollakiuria, and frequent nocturia during pregnancy are favored by the increase of 50% of diuresis during pregnancy. They are reported by more than half of pregnant women and disappear in the majority of cases after delivery [10, 12]. According to Chaliha et al., pollakiuria is not a consequence of increased bladder capacity or a postural effect but is due to a polyuro-polydypsia syndrome contemporary with pregnancy [12].

Urge urinary incontinence is not associated with parity or mode of delivery (vaginal versus caesarean section) [16]. In our series, previous delivery did not also cause more UI in pregnant women in their first trimester ($p = 0.424$).

Other facts may explain the predominance of UI, especially the fact that women often hold back because of the lack of access to hygienic toilets (behavioral and social factors) and also the black race linked to constitutional and genetic factors [8, 17].

As for SUI, pregnancy accelerates the progressive degradation of the mechanisms that ensure continence with effort with the ageing of the tissues, favored by an individual susceptibility [18].

In sum, the risk factors for UI in women during pregnancy may be mechanical and hormonal (metabolic), in addition to obstetric, constitutional, surgical (pelvic), and lifestyle factors.

The two main hypotheses put forward in the literature to explain urinary incontinence in pregnancy are the increase of bladder pressure induced by the gravid uterus (mechanical factor) and hormonal impregnation with progesterone, oestrogen and relaxin, alluding to the metabolic and endocrinological changes that take place during pregnancy [19]. Thus, these two factors lead to a weakening of sphincter functions and a decrease in the supporting capacity of the musculo-ligamentary structures of the pelvic floor [20].

The postural adaptations necessitated by the increase in uterine volume, such as the accentuation of the lumbar lordosis and anteversion of the pelvis, place greater demands on the anterior perineum. The angle of direction of the resultant abdominal pressure is then directed toward the vulvar slit, thus favoring disorders of pelvic statics in general [19].

It should be emphasized that the occurrence of UI during pregnancy is not only a risk for its persistence a few months after delivery but also a risk factor for permanent UI [5, 21].

Knowledge and Attitudes of Pregnant Women

Only a few of the pregnant women in our series had consulted a physician about their UI problem, believing that it is a health problem for which medical follow-up is necessary. A low rate of these women reported that physicians discussed the topic during prenatal consultations.

A systematic review by Charrié and Billecocq showed that pregnant women's knowledge of pelvic perineal disorders is limited. Pregnant women were not aware of the spontaneous evolution of symptoms and the time required to regain normal bladder and bowel function. They did not know who and when to consult when they would have been more willing to consult a health professional if they were better informed [22]. For this reason, Muhammad et al. believe that integrating information on pelvic floor disorders into women's health care pathways could be a multidisciplinary team effort in maternity wards [23].

Knowledge of anatomy and function of the pelvic floor and the existence of its rehabilitation is often insufficient in pregnant women. Among the nulliparous pregnant women interviewed in the study by Tonneau et al., 61% had little knowledge of the perineum and its three orifices (urinary meatus, vaginal orifice, and anus). Pregnant women tended to use their own words and rarely used the word "perineum" which remains a medical term [24], and Neels et al. report that 51% of pregnant women did not receive any information [25].

The French National Authority for Health (HAS) has recommended that women be informed about their intimate anatomy using simple anatomical charts [26]. The use of other visual tools, such as 3D models, would help women to better understand this poorly localized and biomechanically misunderstood pelvic-perineal sphere [25];

and it could also help them to prevent or treat UI during pregnancy with exercises.

A Cochrane review concluded that pelvic floor muscle exercises are effective for primary and secondary prevention of UI in pregnant women and also in the postpartum period, although at present there is insufficient evidence to identify the best treatment modalities [27].

NICE guidelines recommend pelvic floor muscle exercises for women from their first pregnancy, recommendations also issued by the HAS in July 2019. These exercises result in a 50% reduction in antenatal urinary incontinence and 35% reduction in postpartum urinary incontinence [28].

According to Cestaro, birth and parenthood preparation could be an interesting alternative. In her study, 47.5% of pregnant women took part in these sessions [29]. This is in contrast to our study where only 8.7% of pregnant women benefited from these obstetrical gymnastics. However, 56.7% of the pregnant women in our series had already heard of it.

This information should be given during prenatal consultations by health professionals during childbirth preparation sessions. There are several sources of information according to the literature, the first being "health professionals" [22], followed by magazines, books, media, Internet, friends, and family [22, 24, 25].

Conclusion

Urinary incontinence was common in pregnant women in the first trimester of pregnancy with a predominance of urgency type over stress, regardless of parity. This population was more characterized by clinic table of bladder hyperactivity and micturition frequency that increases with the age of the pregnancy. Urinary incontinence was hardly discussed by health professional during prenatal consultations and pregnant women also hardly consulted for this condition. The majority of them had insufficient knowledge of the perineum, its rehabilitation, and gymnastics during pregnancy.

Author's Contribution A-ML Nzinga: Conceptualization, Formal analysis, Methodology, Supervision, Visualization, Roles/Writing – original draft, Writing - review & editing.

EM Dilu: Conceptualization, Formal analysis, Methodology, Writing – review & editing.

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Declarations

Conflict of Interest The authors declare that they have no conflict of interest.

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