



Determinants of Urinary Incontinence using IIQ-7 and UDI-6 in pregnant women: a case series in hospital setting in Kinshasa

Déterminants de l'Incontinence urinaire à l'aide de l'IIQ-7 et de l'UDI-6 chez les femmes enceintes : une série des cas en milieu hospitalier de Kinshasa

Mathieu Nkumu Loposso¹, Tresor Yebe Mosolongo¹, Dieudonné Molamba Moningo¹, Pablo Kuntima Diasama Diangenda¹, Augustin Monga Lembe Punga-Maole¹

Auteur correspondant

Mathieu Nkumu Loposso, MD, PhD
Courriel : mathieuloposso@gmail.com
Service d'Urologie, Département de Chirurgie,
Université de Kinshasa

Summary

Context and objective. Little is known about urinary incontinence (UI) in pregnant women in Sub-Saharan Africa. The present study aimed at describing clinical profile and assessing the determinants of UI in pregnant women. **Methods.** This was an analytical case series study consisting of all pregnant women seen in consultation in 3 medical formations in Kinshasa from June 2020 to May 2021. The selected women answered 2 UI assessment questionnaires: the Incontinence Impact Question-7 (IIQ-7) and the Urinary Distress Inventory-6 (UDI-6). **Results.** One thousand fifteen women were interviewed. The average age was 28.9 ± 6.6 years, the age group of 20-29 years was the most represented. The women's UDI-6 score increased significantly with age ($p=0.001$). The factors leading to severe disability were the university study level ($p<0.001$), multigestation ($p=0.026$), smoking ($p<0.001$), physical inactivity ($p<0.001$), obesity ($p=0.008$), infection ($p<0.001$), chronic cough ($p=0.020$), twin pregnancy ($p=0.027$), pelvic surgery ($p<0.001$), macrosomia ($p<0.001$) and UI ($p<0.001$). **Conclusion.** Urinary incontinence is observed at a high rate in pregnant women, characterized by an increase with age. It is marked by several associated factors (smoking, multiparity, and alcoholism, multigest)

Keywords: incontinence-multigestitis, multiparity, smoking
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Résumé

Contexte et objectif. On sait peu de choses sur l'incontinence urinaire (IU) chez les femmes enceintes en Afrique subsaharienne. La présente étude a visé à décrire le profil clinique et à évaluer les déterminants de l'IU chez les femmes enceintes. **Méthodes.** Il s'agissait d'une série analytique des cas. La population étudiée était constituée de toutes les femmes enceintes vues en consultation dans 3 formations médicales de Kinshasa de Juin 2020 à Mai 2021. Après enquête, toutes ces femmes ont répondu aux questionnaires IIQ-7 et UDI-6. **Résultats.** 1015 femmes ont été interrogées. L'âge moyen était de $28,9 \pm 6,6$ ans, la tranche d'âge 20-29 ans était la plus représentée. Le score UDI-6 des femmes augmentait significativement avec l'âge ($p=0,001$). Les facteurs de handicap sévère étaient le niveau d'étude universitaire ($p<0,001$), la multigestation ($p=0,026$), le tabagisme ($p<0,001$), la sédentarité ($p<0,001$), l'obésité ($p=0,008$), l'infection ($p<0,001$), la toux chronique ($p=0,020$), la grossesse gémellaire ($p=0,027$), la chirurgie pelvienne ($p<0,001$), la macrosomie ($p<0,001$) et l'IU ($p<0,001$). **Conclusion.** L'incontinence urinaire est observée à un taux élevé chez les femmes enceintes, caractérisée par une augmentation avec l'âge. Elle est marquée par plusieurs facteurs associés liés au mode de vie de la femme elle-même (alcoolisme et tabagisme) et aux multiples grossesses.

Mots-clés : incontinence-multigestite, multiparité, tabagisme

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Introduction

Urinary incontinence (UI) is an objectively demonstrable involuntary loss of urine constituting a social or hygiene problem. It is a deficiency, which can be the basis of a variable discomfort depending on the individuals and the societies in which they practice their activities (1). For women, it is a major public health problem. In the Democratic Republic of the Congo (DRC), a relatively recent report on UI in women noted an annual hospital frequency of 1.3% (23/1813 patients) (2). Another recent study of UI in young women in DRC revealed a high frequency of this entity in both urban and rural settings. In addition, UI has been associated with factors such as age between 14 and 17 years old, anxiety and urinary tract infection (3). As a part of standardization according to International Continence Society (ICS), two UI assessment questionnaires, originally in English [Incontinence Impact Question-7, IIQ-7 and Urinary Distress Inventory-6 score, UDI-6] have been translated in 2 Congolese languages (Lingala and Kikongo) (4). ICS epidemiological data reveal that UI prevalence range is 5% to 69 % (5). The various prevalence rates were reported according to perception, methodology and cultural aspects. UI prevalence measures may vary depending on the type of questionnaire used (6). Several risk factors have been noted: age, obesity and adiposity, parity, pregnancy and mode of delivery, menopause, hysterectomy, smoking, physical exercise, comorbidities (diabetes, urinary tract infections, intellectual disability, ischemic heart disease) (7). Data on UI in pregnant women are not correctly described in sub-Saharan areas, less so in the DRC. Our objectives are to characterize pregnant women with UI on a socio-demographic level in a hospital environment in Kinshasa and to determine the clinical characteristics as well as the factors associated with this entity using the IIQ-7 and UDI-6 questionnaires.

Methods

Study Type

An analytical case series study was conducted in Kinshasa, DRC.

Setting and study period

The study was carried out in the 3 following hospitals: Central Military Hospital (HMC), the Sino Congolese Friendship Hospital (HASC) and Kintambo Maternity Hospital (MK) and the surveys covered the period from June 2020 to May 2021.

Sampling

Study population

All pregnant women received in surgery, gynecology and obstetrics consultations in the 3 hospitals during the study period. Women were selected to meet the specific needs of this study hypothesis.

Sample size

The sample size for this study was probabilistic and was calculated from Fisher's formula:

$$n \geq \frac{z^2 \cdot x(p)(1-p)}{d^2}$$
, where n = Sample size, z = 1.96 (confidence coefficient), p = previous prevalence, d = 0.05 (margin of error or range of imprecision reflecting the desired degree of absolute precision).

In the Congolese population, the UI prevalence was 25.6 % according to Nako *et al.* (3).

The calculated sample size was $n \geq (1.96)^2 \times 0.256 \times 0.744 / (0.05)^2 = 293$. By incorporating the 10% of non-respondents, the number of women to be interviewed rose to 322. To further increase the power of the test, 1015 subjects were finally interviewed.

Sampling technique

The women were recruited at 3 degrees. In the first degree, 9 hospitals in three districts of the city of Kinshasa were chosen in a reasonable way. The second-degree sampling procedure concerned the choice of 3 randomly drawn hospitals. In the third degree, the women were selected by systematic survey during consultations in Surgery and Gynecology units and after obtaining their consent to participate in the study.

Selection criteria

a) Inclusion criteria

Any pregnant woman who was at least 18 years old and freely agreed in a written or oral way to participate in the study was included.

b) Non-inclusion criteria

Pregnant women known with mental disorders and those in a state of unconsciousness were not concerned by these surveys. Pregnant women who did not answer two-thirds of the questionnaire questions during the survey were excluded from the study.

Data collection

Investigator training

The development of this work required several experts' assistance, in particular medical specialists, general practitioners and biostatistics experts brought together in a well-organized research team.



The investigator training was carried out in one session before the data collection.

Data collection methods

The data collection methods were based on the semi-structured face-to-face interviews. A standard questionnaire containing a number of themes was developed and submitted to the respondent. The interviewer lets the respondent answer in the order that suits him, trying to refocus the interview on the topics that interest him, if necessary, and to ask questions that are not raised by the respondent. These interviews were entirely anonymous and confidential; the participants were informed of the scientific nature of this study and of the respect of deontological and ethical rules. Participants confirmed their agreement by signing a consent form.

Variables of interest

The interest variables were:

- Socio-demographic characteristics including age, education level and medical training;
- Clinical characteristics and morbid history: gynecological identity (PGA), weight, height, tobacco consumption, alcohol, infection, constipation, physical activity, chronic cough and pelvic surgery.
- Factors favoring UI: cold, cough, defecation, coffee, sealing, alcohol.
- UDI-6 and IIQ-7 scores variables.

Concepts and operational definitions

The UI diagnosis was made on basis of UI questionnaire.

6 questions formed the basis of the diagnosis grouped in the UDI-6 form. Thus, taking into account the total obtained from the UDI-6 score, UI was categorized in terms of severity into the 4 following stages:

- score between 0-2: minimal incontinence
- score between 3-6: moderate incontinence
- score between 7-9: severe incontinence
- Score ≥ 10 : very severe incontinence

Quality of life was assessed using the IIQ-7 score. As for the UDI-6 score, the IIQ-7 sum score made it possible to classify the women into 3 groups:

- low risk of handicap if the score is 0-2
- moderate risk of handicap if the score is 3-9
- risk of severe disability if the score ≥ 10

Statistical analysis

After data collection; an initial quality control was carried out in the field to ensure completeness, data accuracy and reliability. A second consistency check of each sheet was carried out to report corrections to certain inconsistencies noted in order to guarantee the results validity.

The data processing was done in several stages: questionnaire manual analysis, entry, purification, encoding on Excel 2010 as well as analyzes that were carried out on IBM SPSS for Windows version 22.0. We used multiple linear regression and logistic regression analysis to search determinants of UDI-6 score and UI, respectively. Data presentation was made in tables and figures form.

Ethical considerations

Before the questionnaire form was handed out to the participants, each interviewer sought informed consent from the person to be surveyed after a brief study of explanation objectives.

The respondent confidentiality was guaranteed because no personal information that could link the respondent to his data was disclosed. There were no direct benefits from the study participation, but the study results will allow researchers in DRC to implement evidence-based interventions to prevent UI.

Results

A total of 1015 women were questioned on the UI questionnaire. General characteristics of population studied are depicted in table 1. Their average age was 28.9 ± 6.6 years; the age group of 20-29 years was the most represented with 45% of cases, most women came from the HMC (44.3 %) and had mainly secondary school level (48.1 %). Median parity and gestility were 2 (1-3) and 3 (2-4), respectively. The majority of women were pauciparous (35.9 %) and 2nd-3rd parous (43.4%). Their weight, height and average BMI were respectively 74.4 ± 12.2 kg, 1.60 ± 0.09 m and 29.1 ± 5.3 kg/m²; 40.5 % were overweight, 5.6 % and 38.4 % took tobacco and alcohol respectively. Only 28.2 % practiced physical activity and 45% had undergone pelvic surgery.



Table 1. General characteristics of pregnant women with or without UI

Variables	No UI n=348	UI n=667	P
Age (years old)			0.001
<20	43 (12.4)	49 (7.3)	
20-29	171 (49.1)	286 (42.9)	
30-39	121 (34.8)	279 (41.8)	
≥40	13 (3.7)	53 (7.9)	
Educational level			<0.001
Primary	79 (22.7)	71 (10.6)	
Secondary	170 (48.9)	318 (47.7)	
University	99 (28.4)	278 (41.7)	
BMI			0.068
Normal weight	64 (18.4)	152 (22.8)	
Overweight	149 (42.8)	239 (35.8)	
Obesity	135 (38.8)	276 (41.4)	
Parity			0.009
Nulliparous	73 (21.0)	145 (21.7)	
Primiparous	104 (29.9)	154 (23.1)	
Pauciparous	121 (34.8)	243 (36.4)	
Multiparous	50 (14.4)	125 (18.7)	
Gesture			0.034
Primigest	63 (18.1)	102 (15.3)	
2-3rd gesture	164 (47.1)	277 (41.5)	
Multigesture	121 (34.8)	288 (43.2)	
Twin pregnancy	39 (11.2)	51 (7.6)	0.039
Macrosomia	126 (36.2)	223 (33.4)	0.208
Tobacco	25 (7.2)	32 (4.8)	0.079
Alcohol	105 (30.2)	285 (42.7)	<0.001
Infection	313 (89.9)	558 (83.7)	0.004
Constipation	115 (33.0)	339 (50.8)	<0.001
Physical inactivity	186 (53.4)	543 (81.4)	<0.001
Chronic cough	38 (10.9)	49 (7.3)	0.059
Pelvic Surgery	118 (54.0)	269 (40.3)	<0.001

Among UI favoring factors, the majority were cough (60.3%), cold (47%) and defecation (38.3%).

The women's UDI-6 score was found to increase significantly with increasing age (p=0.001).

There was a positive and significant linear correlation between age and UDI-6 score. This correlation was 49 % (r=0.489).



In a multiple linear regression analysis, age, BMI and parity emerged as UDI-6 score independent determinants, explaining 44% of its variability.

The overall frequency of UI in pregnant women determined on the basis of IIQ-7 and UDI-6 questionnaires was 65.7 % (667 women with UI out of 1015 pregnant women). Regarding the score severity, the severe incontinence rate was 42.1%.

The UI frequency increased significantly with the women's age ($p=0.001$) from 53.3% in those under 20 years old to 80.3% in women over 40 years old.

The UI frequency was significantly higher in multigestures with a significant difference ($p=0.033$).

By comparing the subjects with UI and those without UI, we noted that the women with UI comprised a greater proportion of subjects aged 30-39, over 40, university level, multiparity, multigestation, pregnancy twins, alcohol consumption, infection, constipation, physical inactivity and pelvic surgery.

In logistic regression, univariate analysis demonstrated age ≥ 40 years, 30-39 years, high school, university level, multigest, alcohol consumption, physical inactivity, constipation, defecation and coffee consumption emerging as UI determinants.

After adjusting for all these variables in a multiple logistic regression, high school, university level, alcohol consumption, multi-gravity, physical inactivity, constipation and coffee consumption emerged as UI determinants.

The determinants of UI were presented in table 2.

According to the quality of life, the majority of women had moderate disability risk (53.7 %), followed by severe disability risk (35.7 %). The simple linear regression analysis showed a significant positive correlation between the IIQ-7 score and UDI-6 (figure 1).

This correlation was 58 % ($r=0.577$).



Table 2. Determinants of pregnant women Urinary incontinence using logistic regression analysis

Variables	Univariate analysis		Multivariate analysis	
	p	OR (CI 95 %)	P	aOR (CI 95 %)
Age (years old)				
<20		1		1
20-29	0.096	1.47 (0.94-2.31)	0.619	0.86 (0.49-1.54)
30-39	0.003	2.02 (1.28-3.21)	0.926	0.97 (0.51-1.85)
≥40	0.001	3.58 (1.72-7.44)	0.407	1.46 (0.60-3.60)
Education level				
Primary		1		1
Secondary	<0.001	2.08 (1.44-3.02)	0.002	1.91 (1.27-2.87)
University	<0.001	3,12 (2,11-4.63)	<0.001	2.36 (1.52-3.67)
Alcohol				
No		1		1
Yes	<0.001	1.73 (1.31-2.27)	0.022	1.58 (1.05-1.91)
Overweight				
No		1		1
Yes	0.030	1.34 (1.03-1.75)	0.245	1.19 (0.89-1.60)
Gesture				
Primipara		1		1
2-3rd gesture	0.822	1.04 (0.72-1.51)	0.788	1.07 (0.67-1.70)
Multigesture	0.006	1.74 (1.01-2.15)	0.009	1.67 (1.10-2.87)
Physical inactivity				
No		1		1
Yes	<0.001	3.81 (2.86-5.08)	<0.001	2.80 (2.03-3.87)
Constipation				
No		1		1
Yes	<0.001	2.09 (1.60-2.74)	0.005	1.56 (1.14-2.15)
Defecation				
No		1		1
Yes	<0.001	1.92 (1.47-2.50)	0.376	1.15 (0.84-1.58)
Coffee				
No		1		1
Yes	0.001	1.61 (1.23-2.11)	<0.001	1.85 (1.37-2.49)

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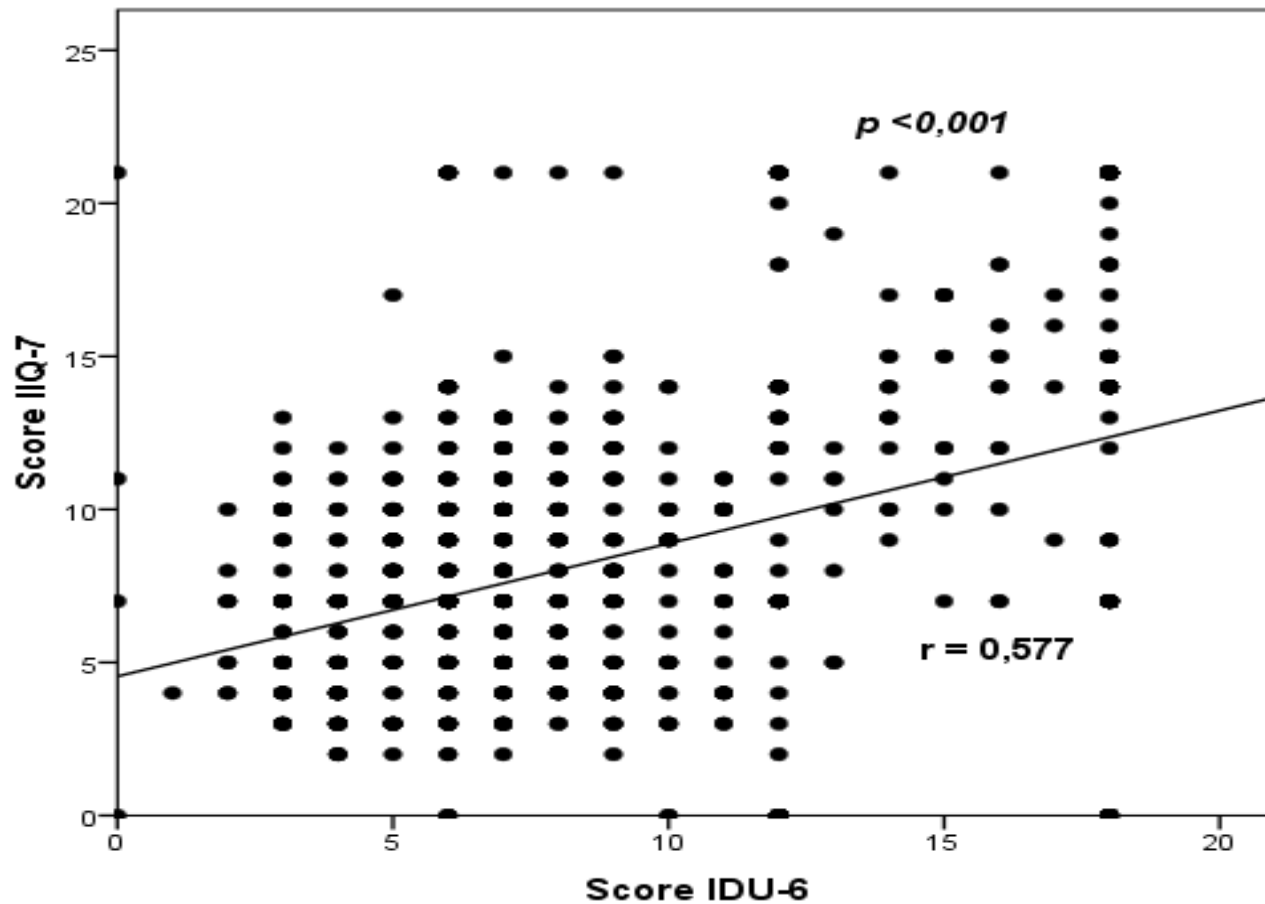


Figure 1. IIQ-7 and UDI-6 correlation in pregnant women

The factors leading to severe disability (table 3) were the university study level ($p<0.001$), multigestation ($p=0.026$), smoking ($p<0.001$), physical inactivity ($p<0.001$), obesity ($p=0.008$), infection ($p<0.001$), chronic cough ($p=0.020$), twin pregnancy ($p=0.027$), pelvic surgery ($p<0.001$), macrosomia ($p<0.001$) and UI ($p<0.001$).



Table 3. Factors associated with quality of life in pregnant women with UI

Variables	Low risk of disability	Moderate risk of disability	Risk of severe disability	P
Age (years old)				0.247
<20	6 (5.6)	60 (11.0)	26 (7.2)	
20-29	57 (52.8)	233 (42.8)	167 (46.1)	
30-39	38 (35.2)	217 (39.8)	145 (40.1)	
≥40	7 (6.5)	35 (6.4)	24 (6.6)	
Educational level				<0.001
Primary	8 (7.4)	109 (20.0)	33 (9.1)	
Secondary	50 (46.3)	284 (52.1)	154 (42.5)	
University	50 (46.3)	152 (27.9)	175 (48.3)	
Parity				0.179
Nulliparous	29 (26.9)	114 (20.9)	75 (20.7)	
Primiparous	31 (28.7)	141 (25.9)	86 (23.8)	
Pauciparous	39 (36.1)	188 (34.5)	137 (37.8)	
Multiparous	9 (8.3)	102 (18.7)	64 (17.7)	
Gesture				0.026
Primigeste	23 (21.3)	95 (17.4)	47 (13.0)	
2-3rd gesture	53 (49.1)	237 (43.5)	151 (41.7)	
Multigesture	32 (29.6)	213 (39.1)	164 (45.3)	
Tobacco	0	33 (6.1)	24 (6.6)	0.026
Alcohol	38 (35.2)	174 (31.9)	178 (49.2)	<0.001
Physical inactivity	3 (2.8)	182 (33.4)	101 (27.9)	<0.001
Overweight	37 (34.3)	201 (36.9)	150 (41.4)	0.257
Obesity	33 (30.6)	243 (44.6)	145 (37.3)	0.008
Infection	68 (63.0)	498 (91.4)	305 (84.3)	<0.001
Constipation	50 (46.3)	250 (45.9)	154 (42.5)	0.578
Chronic cough	2 (1.9)	55 (10.1)	30 (8.3)	0.020
Pelvic surgery	24 (22.2)	269 (49.4)	164 (45.3)	<0.001
Twin pregnancy	3 (2.8)	52 (9.5)	35 (9.7)	0.027
Macrosomia	13 (12.0)	193 (35.4)	143 (39.5)	<0.001
UI				<0.001
No	10 (9.3)	274 (50.3)	64 (17.7)	
Yes	98 (90.7)	271 (49.7)	298 (82.3)	



Discussion

This study objective was to characterize UI pregnant women from a socio-demographic point of view and to determine associated factors as well as clinical characteristics associated with UI pregnant women through the use IIQ-7 and UDI-6. Thus, several observations were made in the characterization of UI in the pregnant women and are discussed in the following paragraphs.

Sociodemographic data

In the current Congolese society, women get married mainly after the end of their high school in urban areas. On the contrary, in rural areas women usually get married in a very young age at the beginning of adolescence, which was the case in the pre-colonial period. The high frequency of incontinent pregnant women around 20 to 29 age old is due to the high sexual activity and marriage during this life period. The high UI prevalence between 20 and 40 years old can be explained by the high pregnancy frequency during this period. Nako *et al.* (3) had reported a high UI frequency in 18-21-year group in their study of incontinence in young people.

Clinical data and UI determinants

Women who had several pregnancies had stress UI (SUI), mainly due to multiple compression between the developing foetus and surrounding maternal organs (8). Hormonal pregnancy disturbances as well as bladder compression by the gravid uterus lead to bladder hyperactivity, which could cause urge UI (UII) or mixed UI (MUI) (9). Indeed, the women bladder neck proximal apparatus is weak compared to that of the man. The female bladder neck distal apparatus is very sensitive to external influences such as pelvic floor insufficiency and injury or denervation due to the childbirth. UI secondary to sphincter insufficiency is more common in women due to weak anatomical structure.

This sphincter incompetencis is also observed in young nulliparous girls. The woman's cervix is not well individualized with fibers essentially of longitudinal orientation. Damage to the sphincter or its innervation (in particular the pudendal nerve) by obstetric trauma reduces the effectiveness of this device, which contributes to SUI risk (10).

In the present study, the UI prevalence was 65.7 %. This observation is similar to those reported by Mason *et al.* with 59% (11) and Whitford *et al.* with 54.3 % (12). In a meta-analysis based on UI prevalence and/or incidence in pregnant women,

63 % of selected women presented with a SUI. The majority of these women had mild to moderate incontinence (13).

It should be noted that the UI increased especially in the second half of pregnancy. Viktrup in Denmark, in a prospective study compared the UI prevalence before and during pregnancy as well as after childbirth and found that the prevalence was 4% before the pregnancy, 32 % during the pregnancy and 7 % after childbirth (14). In addition, according to Fritel, UI increases during pregnancy (between the 1st and 3rd trimester) then decreases spontaneously in the 3 first months of the postpartum, a further increase is observed in the years following childbirth (15).

The high prevalence during the pregnancy is related to SUI given the mechanisms involved in this type of UI. However, the present study did not look at these types of UI separately. Future research could study the different types of UI by integrating urodynamic assessments.

In the present study, multiple births, twin pregnancies, smoking, overweight, etc. were the UI risk factors. These findings are in accordance with those in the literature showing that parity, pre-pregnancy UI, overweight, vaginal delivery (compared to cesarean section) are pregnancy-related risk factors of UI (16- 22).

The UDI-6 score increased with age in patients of the present study, reflecting a progressive physiological mechanism deterioration linked to UI and increasing age. Indeed, the urological distress inventory score (UDI-6) short form makes it possible to detect UI associated with proctological symptoms by evaluating the severity degree, pain and dysuria (23). As age advances, a progressive score deterioration is noted.

The very severe UI forms were noted at higher rates than the minimal forms, even the multigestures had UI at higher rates than primigravida. This is probably explained by sphincter mechanisms alteration during multiple pregnancies as well as pregnancy hormonal disturbances leading to hyperactivity during this period.

The pregnant women BMI was higher than the norms in the present study; indeed 2/5 of pregnant women with UI were obese. This can be caused by the pregnancy weight increase, especially in the last trimester.

Indeed, in 2016, the global report indicated that obesity prevalence increased from 3.2% in 1975 to



10.8 % in 2014 in men and 6.4 % to 10.4 % in women and in all ages especially in developed countries (24). High BMI in women was positively associated with UI in studies conducted in Ghana (25) and China (26). In case of weight loss, a decrease in UI has even been demonstrated (18). Future postpartum obese group evaluation would be useful to determine the risk to develop UI.

Correlation between UDI-6 and IIQ-7 score

To assess urinary incontinence impact, it is necessary to measure both the level of an individual's symptoms and the extent to which they affect their life. Questionnaires are widely used to assess outcomes in urogynecology and have been previously validated in Lingala and Kikongo in DRC (4).

Kerry Avery, Donovan, and Paul Abrams developed these questionnaires based on psychometric standards, construct and convergent validity, reliability, and adaptative sensitivity (27). In the present study, a positive correlation was found between the IIQ-7 and the UDI-6 scores. This result can be explained by the fact that both questionnaires assess similar parameters.

Women's quality of life

The UI-associated factors such as educational level, multigestation, physical inactivity, smoking, obesity, chronic cough, pregnancy and pelvic surgery were the source of severe handicap to pregnant women in the present study. Age wasn't among these factors although Steward et al. has noted age association with UI (28). In all available studies, the age-specific incidence is relatively low in women under 40, but increases with age (29).

To summarize the present study, UI is a very common symptom during pregnancy, and its prevalence increases as the weeks of gestation progress. Among the UI types, SUI is the most common. The level of UI discomfort is assessed heterogeneously and is experienced as mild to moderate by pregnant women.

Limits, strengths and perspectives

During this study, there were no incontinence specification types (SUI, UUI, MUI).

Other limitations include patient self-reporting nature of the study (questionnaire), which could lead to bias in the present study results.

Nevertheless, this study has strengths: i) it is the first study having used international questionnaires in the Congolese language for Congolese pregnant women, ii) It studied characteristics, determinants

and factors associated with UI in pregnant women, and iii) the robustness of multivariate analyses as well as the multiple regressions used.

In order to improve pregnant women quality of life, planification program containing physical activity could be installed to prevent urinary incontinence during pregnancy.

Conclusion

This is an analytical study using UDI-6 and IIQ-7 questionnaires to assess symptomatic and asymptomatic characteristics related to involuntary urine loss in pregnant women. This entity concerns women in active procreation period (20 to 39 years) and is more observed in paucipares, multigestures, overweight and obese women. The UDI-6 and IIQ-7 score have a positive correlation with age.

The independent determinants and associated factors involved in UI in pregnant women are age, BMI, parity, smoking, urinary tract infections, and twin pregnancy. Pregnant women should be encouraged to practice physical activity during pregnancy to prevent urinary incontinence and thus maintain the quality of life.

Conflict of interest

Authors declared no conflict of interest

Contribution for authors

Mathieu Nkumu Lopoosso initiated the study, contributed to the drafting of the manuscript and presented his results at the ICS congress. Mosolongo Yebe Tresor collected the data, participated in the writing of this manuscript and presented these results at the ACU 2022 congress. Dieudonne Molamba Moningo, Pablo Kuntima Diasama Diangenda, Augustin Monga Lembe Punga-Maole. They read, and made corrections to the manuscript. All authors read and approved the final and revised version of manuscript.

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