#26163_Title: Prevalence and risk factors of urinary incontinence among Congolese female in Democratic Republic of Congo: Community- based cross-sectional study

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Hypothesis / aims of study

Urinary incontinence (UI) is the complaint of any involuntary loss of urine affecting the female population. It is a very common condition worldwise with a prevalence ranging from 15% to 55% [1]. Some studies carried out in Africa stand out a prevalence ranging from 21.3% to 41.5% [2].

A study carried out in a hospital in the Democratic Republic of the Congo (DRC) revealed a UI frequency of 1.3% (23 cases out of 1 813 patients), considering that this condition is under-diagnosed in the country's clinical environment.

The lack of data on adult female urinary incontinence in DRC has justified the necessity to carry out a study to highlight the epidemio-clinical profile of urinary incontinence in the general population among female aged 18 and over. The aim is to highlight the prevalence and factors that may contribute to the occurrence of UI.

Study design, materials and methods

This is a community-based cross-sectional study conducted during the period from September 2021 to August 2023 in 507 adult females (≥18 years) living in the DRC. For a prevalence of 20.5% in the literature, the sample size was calculated at 246 with the following formula: $n = z^2 \times p (1 - p) / m^2$ of which z is 1.96 and m is 0.05. Recruitment was carried out in 6 provinces of the DRC, notably Kinshasa, Equateur, Kasaï-Oriental, North and South Kivu according to ethnolinguistic distribution. The health institutions of the health zones of these provinces served as the framework for the study. All female who spoke French or could be translated and had given written consent were included. Pregnant or postpartum female ≤ 6 months and those with vesicovaginal fistulas (Extraurethral incontinence) were excluded. We collected variables defining socio-demographic and clinical characteristics, urinary dysfunctions, the External assessment per perineum (perineal skin assessment and Digital palpation) and the Tests of digital palpation per vaginam (tone muscle and voluntary contraction of the PFM according to PERFECT method). PERFECT means: P=strength; E=endurance; R= Repeatability of contraction and F= number of rapid contractions performed.

The International Consultation on Incontinence Questionnaire Female Lower Urinary Tract Symptoms Modules (ICIQ-FLUTS), in French, was used to assess and quantify urinary symptoms and their level of discomfort. Depending on data distribution, descriptive statistics were produced using mean±SD, median (IQR) and percentages. For inferential statistics, Student's t and Fisher's exact test were used to compare study variables between incontinent and continent female. Binary logistic regression was used to perform univariate and multivariate analyses to determine factors that might influence the occurrence of UI. The α is fixed at 0.05.

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Results

The prevalence of Urinary incontinence was 31% (IC95%: 27 - 35.2%) (157 out of 507 female), 51% of whom were embarrassed. The median ICIQ-FLUTS incontinence score was 4(3-8). The frequencies of urgency urinary incontinence (UUI), stress urinary incontinence (SUI), Mixed urinary incontinence and Insensible urinary incontinence were 63.7%, 11.5%, 22.9% and 1.9% respectively. 56.6% had up to primary education. The mean age of incontinent female was 36.9±15.1 years and that of continent female was 32.2±14.2 years (p <0.001).

The proportion of incontinent female who had given birth was higher than that of continent female (85.3%>74%; p<0.05). The median (IQR) of pelvic floor muscles functionality according to PERFECT of incontinent and continent female were (p=NS) respectively P: 2(1-3) vs 2(2-3); E: 4(2-7) vs 3(2-6); R: 2(1-4) vs 2(1-4); F: 3(1-7) vs (3(1-6).

In univariate analysis, age, occupation status, constipation, parity, episiotomy, perineal tears and loss of vulvar elasticity were the risk factor of the UI. Symptoms of vulvar infections are not considered a risk factor. But in multivarious analysis, only constipation, episiotomy, perineal tears and occupation status were the risk factor of the UI. No parameter of PFM assessment (tone, PERFECT, ...) was related to the occurrence of UI.

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Table 1. Prevalence of Urinary incontinence and its types

Variables	n(Total)	Prevalence	CI95%
Urinary incontinence	157(507)	31	27-35.2
Urgency Urinary incontinence	136(507)	26.8	23-30.9
Stress Urinary incontinence	54(507)	10.7	8,1-13.7
Insensible urinary incontinence	3(507)	0.6	0.1-11.3
Types of UI (N=157)			
Urgency Urinary incontinence	100	63.7	55.7-71.2
Stress Urinary incontinence	18	11.5	6.9-17.5
MUI	36	22.9	16.6-30.3
Insensible urinary incontinence	3	1.9	0.4-5.5

Table2. Univariate and multivariate analysis of risk factor associated with urinary incontinence

Variables	COR(CI95%)	P value	AOR(CI95%)	P value
Marital status		0,139	-	
Single	1		-	
Married/cohabiting	1,49(0,96-2,32)	0,069	-	
Others	1,62(0,89-2,95)	0,111	-	
Ethnic group of DRC		0,135	-	
Cosmopolite	1		-	
Swahili	1,28(0,65-2,53)	0,469	-	
Bakongo	1,15(0,58-2,29)	0,671	-	
Bangala	0,70(0,35-1,41)	0,323	-	
Baluba	0,72(0,35-1,46)	0,364	-	
BMI		0,052		
Thinness	0,56(0,28-1,14)	0,113	--	
Overweight/obese	1,39(0,90-2,13)	0,132	--	
Menopausal status	1,49(0,93-2,36)	0,090	-	
Sexually active female	1,01(0,69-1,49)	0,924	-	
Age (years)		0.024		0.36
18 - 29	1		1	
30 - 64	1.6(1.13-2.48)	0.010	1.2(0.77-2.02)	0.36
=65	1.9(0.78-4.62)	0.15	1.9(0.70-5.34)	0.19
Occupation status		0.001		0.025
Unemployed	1		1	
Farmers	1,67(0,87-3,21)	0.119	1.1(0.52-2.41)	0.75
Traders/artisans	2,26(1,147-3,46)	<0.001	2.1(1.25-3.42)	0.005
Civil/public servants	2.51(1.21-5.22)	0.013	1.9(0.83-4.5)	0.12
Constipation	1.89(1.23-2.92)	0,004	1.9(1.14-3.07)	0.013
Parity		0,023		0.71
Primiparous	1.71(0.87-3.35)	0,114	0.6(0.25-1.52)	0.30
Multiparous	1.84(1.03-3.31)	0,039	0.7(0.34-1.65)	0.48
Large multiparous	2.36(1.36-4.07)	0,002	0.6(0.27-1.56)	0.33
Episiotomy	2.11(1.41-3.15)	<0.001	1.8(1.14-2.87)	0.011
Perineal tears	2.37(1.47-3.83)	<0.001	1.7(1.0-3.02)	0.048
No Vulvar elasticity	1.8(1.16-2.90)	0,009	1.5(0.96-2.62)	0.06
Vulve dystrophique	1,51(0,92-2,49)	0,103	-	
Vulvar infection symptoms	1,07(0,56-2,04)	0,826	-	
PFM tone		0,166	-	
Decreased tone	1,40(0,58-2,30)	0,182	-	
Increased tone	1,58(0,94-2,66)	0,080	-	
Non or delayed relaxation of PFM	1,1(0,73-1,73)	0,571	-	
Absent or weak strength (0-2)	1,20(0,79-1,83)	0,389	-	
PERFECT method				
P	0,95(0,81-1,11)	0,536		
E	1,03(0,97-1,10)	0,233		
R	0,99(0,91-1,09)	0,988		
F	1,01(0,95-1,08)	0,597		

Interpretation of results

This study shows that UI is common in the DRC, with a high prevalence corresponding to range found in the literature worldwide and in Africa. More than half of these female were bothered by the condition without seeking medical attention. The most frequent type was UUI. This trend corroborates that of certain studies conducted in Africa, in particular one carried out in a clinical setting in DRC [2]. The study by Siobhan et al. (2018) notes several other studies that highlight this predominance, including one carried out in the USA among Black female of reproductive and menopausal age. He justifies this on the grounds that there are possible physiological protective factors for the development of stress urinary incontinence in black female, including higher urethral closure pressure, greater urethral length and pubococcygeal muscle strength, greater urethral volume and greater vesical mobility [3]. Some risk factors associated with the occurrence of UI described in the literature were found in the present study, notably constipation, certain occupations requiring heavy lifting (Traders/artisans), and trauma related to vaginal delivery (episiotomy and perineal tear). We did not identify with certainty a urinary or vulvar infection, which could further explain the high rate of UUI. The reduced functionality of the PFMs according to PERFECT associated with these risk factors could also explain it.

Conclusions

This study showed the magnitude and risk factors of UI among adult females in Democratic Republic of Congo. This condition causes bothered for female affecting their quality of life and they don't unfortunately consult due to the ignorance, taboo or to the lack of medical guidance. This study raises the issue of raising awareness among female and health professionals, and also of setting up appropriate multidisciplinary care in the DRC.

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