PROPORTION, QUALITY IF LIFE AND FACTORS ASSOCIATED WITH PERINATAL URINARY INCONTINENCE AT MUHIMBILI NATIONAL HOSPITAL

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PROPORTION, QUALITY IF LIFE AND FACTORS ASSOCIATED WITH PERINATAL URINARY INCONTINENCE AT MUHIMBILI NATIONAL HOSPITAL

By

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A Dissertation Submitted in Partial Fulfillment of Requirements for the Degree of Masters of Medicine in Urology at

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CERTIFICATION

The undersigned certify that he/she has read and hereby recommend for acceptances of dissertation entitled **'proportion, quality of life and Factors associated with perinatal urinary incontinence at Muhimbili national hospital'** in partial fulfillment of the requirements for the degree of Masters of Medicine in urology of the Muhimbili University of Health and Allied Sciences.

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Prof Aboud Muhsin

(Co-Supervisor)

Date: _____

DECLARATION AND COPYRIGHT

I, **Geofrey P Chiloleti**, declare that this **dissertation** is my own original work and that it has not been presented and will not be presented to any other University for similar or any other degree award.

Signature ……. Date …….

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To my assistance Dr Lameck Gwanika, you have withstood the test of time. May God bless you abundantly, and fulfil your dream

My family, since they have been inspiring, encouraging all these periods, your prayers made me come this far.

DEDICATION

I would like to dedicate this dissertation to my esteemed family Mr. & Mrs. Philemon Chiloleti, My sisters Prisca, Ruth and Jane, for their sacrifice, perseverance and devotion throughout my entire time of studies.

ABSTRACT

Introduction: Perinatal Urine Incontinence (PUI) is the condition affecting around 200 million women worldwide. It is hypothesized that it has a multifactorial etiology that includes hormonal changes, pregnancy, urethral angle changes, and childbirth-related forces. The prevalence of PUI ranges from 32% to 64%. These conditions affect the quality of life, leading to significant physical and emotional distress, self-esteem, social interactions, postpartum depression and anxiety. Determination of factors associated with PUI and provide appropriate support and treatment options for women experiencing perinatal urinary incontinence can improve the well-being of those affected.

Objectives: The aim is to assess the proportion, quality of life and factors associated with perinatal urinary incontinence among pregnant women admitted to the Muhimbili National Hospital

Methodology: Prospective cross-sectional study. Structured questionnaire was given to all 354 pregnant women in perinatal period, and ICIQ-UI SF Tool was given only to individuals who had urine incontinence to evaluate their quality of life. Descriptive statistics and categorical data were described by frequency tables, graphs, and percentages, and numerical variables by mean, median, and standard deviation. Bivariate logistic regression was used to obtain variables that have an association with PUI. Multivariate logistic regression for the control effect of confounders.

Results: The mean age of the participants was 30 years (range 30–34 years). The overall proportion of PUI among the participants was 59 [16.7%]. Of the total participants with PUI, 28 (49.1%) had SUI, 9 (15.8%) had UUI, MUI, and 1 (1.8%). Overall, among the participants who had PUI, quality of life was moderately affected in 31 (52.5%) participants, followed by 17 (28.8%) whose QoL was slightly affected, 10 (16.9%) whose QoL was poor, and only 1 (1.7%) whose quality of life was very poor. In the multivariable logistic regression model, factors associated during the perinatal

period were significantly associated with PUI, with a p value <0.05. A significant association between UI and a normal BMI, pre-obesity [AOR 1.351 95% CI 1.161-1.765], grand multipara [AOR 1.092 95% CI 1.027-1.323], and a previous history of cesarean section [AOR. 5.126 95% CI 2.081-12.628]

Conclusion: Perinatal urinary incontinence significantly affects morbidity at different levels, even though it is not a life-threatening disease. The burden of UI on daily life activities, sexual function, interpersonal relationships, social interactions and psychological well-being may be substantial; however, women's different perceptions may change their relative impact on QoL.

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ABBREVIATIONS

ANC	Antenatal clinic
BMI	Body Mass Index
DM	Diabetic mellitus
ICIQ-UI SF	International Consultation on Incontinence Questionnaire Urinary Incontinence Short Form
MNH	Muhimbili national hospital
MUHAS	Muhimbili university of health and allied science
LUTS'	Lower urinary tracts symptoms
PUI	Perinatal urine incontinence
PFM	Pelvic floor muscles
QoL	Quality of Life
U I	Urinary incontinence
VVF	Vesical-vaginal fistula

OPERATIONAL DEFINITIONS

Perinatal period

Is the period from 28 weeks Gestation age to 7th day after delivery. (1)

Stress incontinence

Is the leakage of urine when a body is subjected to the physical movement or activity such as coughing, laughing, sneezing, running or heavy lifting. (2)

Urge incontinence

Is a sudden experience, or intense need to urinate followed by an uncontrollable loss of urine. Urge incontinence can be caused by infection or a more serious condition like diabetes a neurological disorder. (3)

Overflow incontinence

Is the frequent urine loss or a continual dribble due to an inability to empty urinary bladder fully. (4)

Mixed incontinence

Is the experience of multiple types of incontinence, commonly stress and urge incontinence. (4**)**

Urodynamics

Is a urological investigation which comprises different techniques in establish the ability of bladder to store urine, and to expel urine. It involves neuro-coordination and physic of the bladder in storing and expel urine. (5)

CHAPTER ONE

1.0 INTRODUCTION

1.1 Background

1.1.1 Introduction and Pathophysiology

Perinatal urine incontinence is the loss of urine involuntary, experienced from 28 weeks gestational age (where it is equivalent to 1000g weight of the fetus) up to the seventh day after delivery. Childbirth associates with physiologic changes and distortions of the anatomy that normally account for urine incontinence and impact the quality of life of most pregnant women. (6)(7) (8)

Perinatal urinary incontinence can be further subcategorized as urge incontinence, stress incontinence, or mixed incontinence in the perinatal period. (9)(10)(11)

The exact pathophysiology of urine incontinence is not known, but it is postulated to be a multi-factorial etiology including hormonal changes, the pregnancy itself, changes in the urethral angle, and the dynamic force responsible during childbirth, which involves muscle and connective tissue, one of them includes damage to the pudendal nerve due to compression by the fetal head, which causes pudendal nerve neuropathy, but this slowly spontaneous regression over time. Another, when there is a tear of the two anal sphincters that control feces, that is an internal and external anal sphincter, and this will cause the fecal incontinence. (10)

Different factors have been reported to associates with perinatal urinary incontinence, including age, obesity, number of parities, mode of delivery, family history, and other comorbidities' like diabetes mellitus, stroke, peripheral neuropathies, spinal disease, and other related abnormalities, all these contribute to the urine as well as fecal incontinence. (12)(10)

Perinatal urinary incontinence poses a serious problem in changing the overall quality of life, as well as psychological problems like decreased self-esteem and depression during pregnancy and after delivery. Sometimes persistent symptoms can alter the

lifestyle of the mother afterward, which includes intimacy with a partner and other households and other social relations. (10)

1.1.2 The burden of perinatal Urinary incontinence

Worldwide, it is estimated that about 200 million women's populations are affected by urinary incontinence, especially those of childbearing age. Among those women, pregnant women's prevalence ranges from 32% to 64%, according to the international consultation on incontinence report. Urine incontinence as a result of an obstetric fistula or any Vesico-cutaneous fistula accounts for 2 million people affected worldwide. (10)

Internationally, 25% of women in the United States were reported to have urinary incontinence, which is associated with pregnancy, and the prevalence increases as age increases. Another study was done in England and shows the prevalence of urinary incontinence in pregnancy ranges from 19.9% to 70%. (13)

In Africa, most of the sub-Saharan countries point out few documents that show the general incidence of urinary incontinence in pregnant women. The overall prevalence of the study done in Ethiopia was 48% of urinary incontinence during the perinatal period. (14)

In Tanzania, a study done in the northern Kilimanjaro region described the prevalence of urine incontinence generally as 42%. Most of the studies done reflect obstetric fistula, the most common Vesicovaginal fistula, which presents with continuous leakage, as one of the major complications during obstructed labor in rural areas due to factors like distance to the health facility, poverty, low-economic status, ignorance, and inadequate emergency obstetric care that end up with obstetric complications. Little or no is known about perinatal urinary incontinence, and we acknowledge the gap in this field**.** (15)

Another study that was done in Tanzania showed a burden of incontinence postpartum as a result of obstructed labor and obstetric fistula. That study showed a perception of and awareness among reproductive age to be 60%. This shows the one-sided awareness postpartum, and the postulated cause is known as a result of the

complicated process. The other predictors of incontinence in the perinatal period apart from obstructed labor remain to be undermined and given little attention towards the approach of cause, diagnosis, and treatment. (16)

1.1.3 Treatment overview

Treatment of surgical options for incontinence in different research studies remains a gold standard compared to medical options. Worldwide, surgery for urinary incontinence is limited to stress incontinence. Over the past decade, the surgical techniques that have been utilized in treatment options are in three groups: urethropexy, colpo-suspension, sling, artificial urethral sphincter, and urethral plication. (17)

There is no clear medical consensus regarding the indication for surgery for urine incontinence, but most of the experts prefer to do surgery 6 months to 1 year post-delivery with those who are persistent with UI. Other non-surgical options include pelvic floor muscle exercise, like the Kegel exercise, which helps in tightening and relaxing the muscles that control urine flow; pessaries, a plastic device inserted into the vagina for stress incontinence; bulk agents, including paste or gel that are injected near the urinary sphincter for stress incontinence; electrical stimulation; and urethral catheters. (18)

All these options of treatment can only be made possible when facilitated by the development of better diagnostic aids, including urodynamic studies, to be available for better standardization of intervention. (19)

1.2 Problem statement

Worldwide perinatal urinary incontinence has increased significantly in magnitude, also different author has put much effort to establish some associated risk factors that are associated with Perinatal urinary incontinence and addressing the psychological burden that significantly affects the quality of life in a perinatal period. Epidemiological studies also illustrate the different comorbidities' that were associated with perinatal urinary incontinence.(19)

In our facility, Muhimbili national hospital, the magnitude of the perinatal urinary incontinence and the overall psychological problem that affects the quality of life is not clearly stated thus making the awareness about the problem not to be addressed among the affected population in a specified perinatal period.

To establish the magnitude and know the burden of the condition together with associated risk factors and raise awareness will be the one-stage foundation findings towards other upcoming research in the field, and plan a guideline and standard of treatment as a whole among women

1.3 Conceptual framework

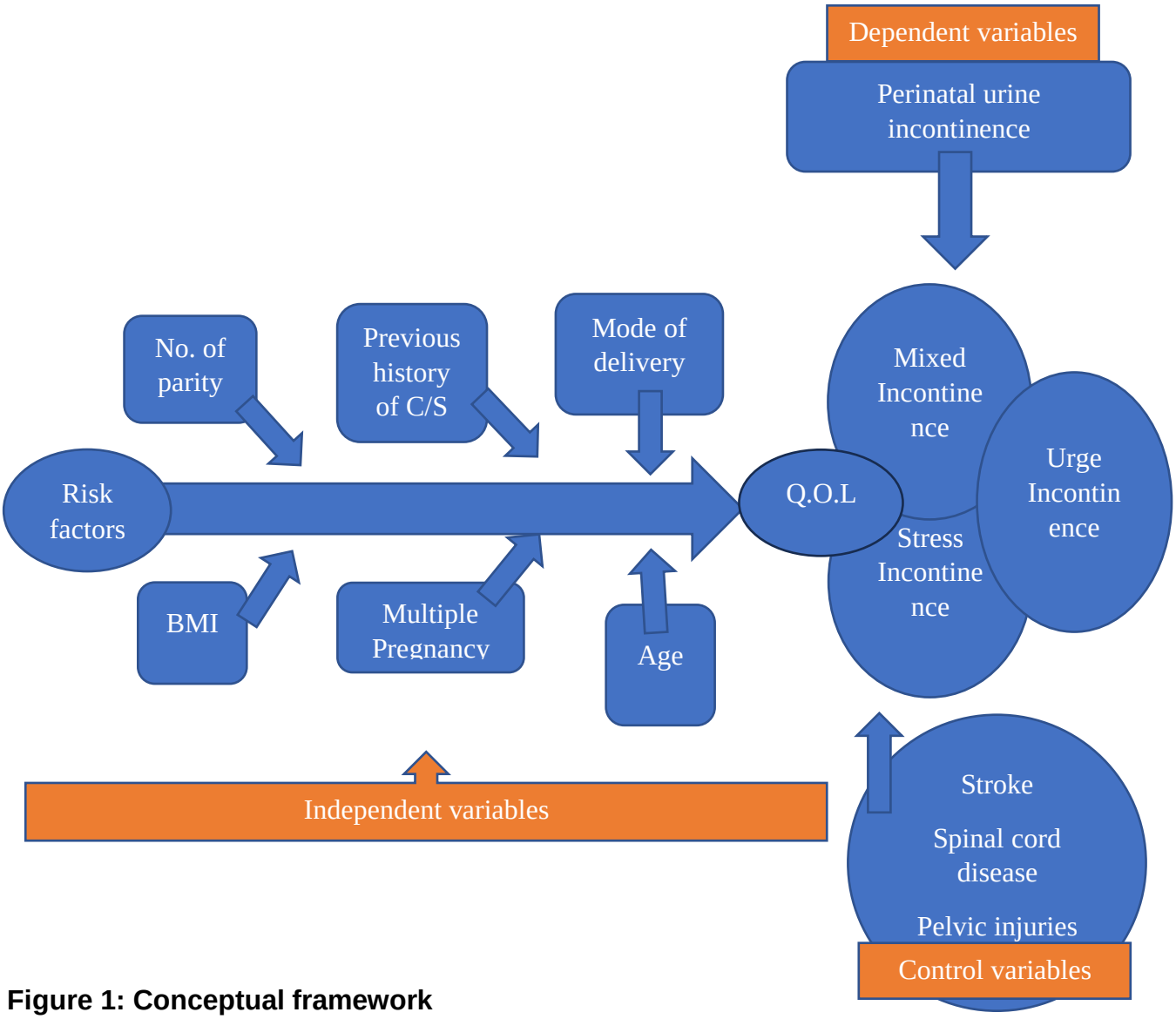


Figure 1: Conceptual framework

1.3.1 Description of conceptual framework

The study is set to identify prevalence, quality of life and factors associated with PUI. The figure 1, describes the possible relationships between the independent and dependent variables. Independent variables are social-demographic data such as age, and other factors such as BMI, number of parities, miscarriages, multiple pregnancy, previous history of UI, mode of delivery, current respiratory status. The dependent variables are Q.O.L and UI, where UI is further subclassified as mixed incontinence, stress incontinence, and urge incontinence. Other control variables such as stroke, spinal disease and pelvic injuries.

.

1.4 Rationale

The significance of this study is to help establish the foundation of Perinatal urinary incontinence awareness in our facility, and possibly knowing the burden and associated risk factors, pay more attention to the different physicians while attending such patients, care to be taken in the reassurance of the patient and for the persistent and deterioration of the disease, for a future urological approach of treatment and overall management.

1.5 Research questions

1.5.1 Primary research questions

What is the burden of perinatal urinary incontinence, and risk factors associated in pregnant women attending antenatal clinic at MNH

1.5.2 Secondary questions

What is the impact of perinatal urinary incontinence on quality of life

1.6 Objectives

1.6.1 Broad Objectives

To assess factors associated with perinatal urinary incontinence among patients attending national hospital

1.6.2 Specific objectives

1. To determine the proportion of perinatal urinary incontinence among patient attending Muhimbili national hospital
2. To determine the characteristics of urine incontinence that are associated in perinatal period
3. To determine factors associated with Perinatal urinary incontinence among patient attending Muhimbili national hospital
4. To assess the quality of life in patient with Perinatal urinary incontinence attending Muhimbili national hospital

1.7 Literature review

1.7.1 Proportion of perinatal urinary incontinence

In a cross-sectional study done in Ethiopia, which involved 422 pregnant women following an antenatal clinic at the University of Gondar Hospital, the prevalence of urinary incontinence during pregnancy ranged from 34% to 64%. Although the overall prevalence among the participants was 11% after adjustment of episiotomy, constipation, sinusitis, and obesity, This was found to be lower compared to the previous reference study that was done in Europe, which shows a 26% to 71% prevalence of urinary incontinence.(14)

Another study conducted in the USA showed that 25% of women in the USA have a prevalence between 10% to 40% in 2004. But recent studies show an increase in prevalence around menopause, so age is an independent risk factor. (19)

A study done in London, which interviewed 549 nulliparous women after 38 weeks gestation and 3 months after delivery, i.e., in antenatally and all completed postpartum follow-ups, shows the prevalence of urine incontinence before, during, and after pregnancy was 3.6%, 43.7%, and 14.6%, respectively.(13)

A study done in Ethiopia in Makelle City in 2019 included 317 pregnant women, which shows the prevalence of perinatal urinary incontinence to be 23%. Another associated factor was mentioned that was found to be gestation age by 9.6 adjusted odds.(10)

The meta-analysis included 44 studies that reported the prevalence of stress UI to be 63% as the most common and also reported UI to be very prevalent and increased in the gestation week of pregnancy (20)

1.7.2 Characteristics of the urinary incontinence

Similar studies that were done in the USA showed the prevalence of urine incontinence increased in women approaching menopause, from 10% to 40%. However, stress incontinence was seen more in young adults, especially in the pregnancy period, but urge incontinence and mixed incontinence increased with age. The later conditions are the ones that need surgical treatment.(19)

In a cross-sectional study conducted in Tanzania, 1048 participants, aged women between 18 and 90 living in rural areas in Kilimanjaro, showed a prevalence of 42% urine incontinence in the general population, and the most common type was stress incontinence (17%), urge incontinence (9%), and mixed urine incontinence (16%). In this study, urine incontinence was found to significantly increase with parity.(21)

The study review done in China in 2020 showed stress urinary incontinence to be the most common type in pregnant women, from 19.9% to 70% in nulliparous women, followed by the rest type, mixed, and urinary incontinence. Which later shows occurrence from delivery primiparous is from 0.7% to 35%. This study indicated that PFMT accounted for the fall in the occurrence of UI in pregnant women after delivery.(9)

A study that was done in Ethiopia clarified three different types of urine incontinence, of which the commonest prevalence was 59% and 40% in stress and mixed incontinence cases, respectively. Although generally, the prevalence was found to be 32% to 64%. Pregnancy was a major risk factor due to physiological and anatomical changes, especially during the last trimester due to weakened pelvic floor muscles. Other factors were the age of the mother, parity, previous delivery, BMI, and UI before pregnancy.(14)

A study that was done in Turkey gave a description of the prevalence of subgroups of urinary incontinence among women who were attending three health facilities in Erzurum city center. Among the 430 women, 160 women, equal to 37.2%, had urinary incontinence, and only 29.35 were visiting health facilities because of this complaint.

Stress incontinence was at a high rate of 20.6%, followed by other types and mixed types by 13.7%.(12)

1.7.3 Risk factors of perinatal urinary incontinence

A systematic review was done in Iran, looking into maternal, neonatal, and obstetric risk factors associated with urinary incontinence showed that UI was 3.7 times more likely to occur in vaginal delivery, 5.2 times in pregnancy, and 1.2 times in episiotomy. Others were a perineal tear, instrument delivery in contrast to a caesarian section, maternal age, pre-pregnant BMI, and neonatal birth weight, which have a direct relationship with urine incontinence. (22)(20)

A study on the associated risk factor in pregnant women was conducted in Ethiopia. The study enrolled 317 expectant mothers, and the findings revealed a 23% overall prevalence. 9.6 times (1.87–49.39, 95%) strongly related UI to gestation age, 6.3 times (1.48–27.05, 95%) more likely related to parity, 6.2 times (2.15–18.28, 95%) more often related to prior miscarriages, and 8.25 times (3.12–18.84, 95%) more likely related to constipation. 7.55 times (2.51-22.67) more likely to be associated with a weak pelvic floor, and 6.3 times (2.05-19.43) more likely to be associated with a respiratory issue. (22)(10)(14)

A study done in Ethiopia, which recruited 422 pregnant women who were followed in the antenatal clinic at Gondar Hospital, showed a lower prevalence compared to the previous studies, but the strongly associated actors that influenced UI were respiratory problems, constipation, maternal BMI, and previous episiotomies.(10,14)

In Erzurum, Turkey, a study was done to indicate the incidence and risk factors for a woman visiting a health facility. The study, which included 430 women, showed 37% had UI, but only 29% came with that complaint. It was found that UI has a significant correlation with genital prolapse, duration of delivery, number of children, weight over 4kg, and smoking.(14)

A literature review that included 12 full articles in a different study design showed that the risk factors and predictors of urinary incontinence are age, parity, birth weight, BMI, menopause, number of abortions, recurrent UTI, and commodities like diabetes mellitus and chronic respiratory disease. However, this shows generally UI, not specified in what of pregnancy. (23)(24)

1.7 .4 Quality of life of perinatal urinary incontinence

The study was done in Malaysia to determine urine incontinence and its relationship with QoL among incontinent pregnant women, which involved 440 pregnant women. This study showed a significant decrease in QoL in all types of urinary incontinence: stress UI (OR 6.94, 95% CI 4.00–12.04) and surge UI (OR 3.87, 95% CI 0.48–31.28). This study also showed the relationship between the Severity of urinary incontinence and QoL. (25)

Another study was done in Brazil, recruiting 495 pregnant women, of whom 71% reported having urinary incontinence during the last four weeks of pregnancy. Among those, 71% showed a severe impact on quality of life among the incontinent women described by the ICQ-SF of 11 median scores (range 3–21) as poor quality of life. (26)

CHAPTER TWO

2.0 METHODOLOGY

2.1 Study design

A cross-section prospective study design was used, including pregnant women from 28week gestation up to 7th day after delivery during the period of study from August 2023 to April 2024.

2.2 Study duration

The duration of the study from August 2023 to April 2024

2.3 Study area

A tertiary hospital in a national level, located in Dar es salaam city, MNH. Provide super specialized service in each department. Has total accommodation about 1500 bed capacity. Obstetrics /gynecology department has a total number of four subunits called Firms. Each firm has its own wards, and clinic activities are run separately by the respective head of the firm. The studying area included patients attending the clinic, those who were admitted in an antenatal ward for any cause of admission, and those who will be admitted to the postnatal ward for any postulated cause.

2.4 Study population

The study population was eligible pregnant women from 28 weeks gestation age up to the 7th day after delivery during the period of study from August 2023 to April 2024, during the period of study from August 2023 to April 2024. The patients recruited from three different areas, those who attended the outpatient Antenatal clinic, those who were admitted to the Antenatal ward, and those who have already delivered and admitted to the postnatal ward up to 7th-day post delivery

2.5 Inclusion criteria

The study included all pregnant women from 28-week gestation age up to 7th day after delivery

1. Those who attend antenatal clinic
2. Those who are admitted to the antenatal ward
3. Those who are admitted in the postnatal ward 7th post-delivery only

2.6 Exclusion criteria

This study excluded pregnant women with co-morbid like Vesico-vaginal fistula, neurological diseases or pelvic injuries who attended an antenatal clinic or were admitted to an antenatal ward between the perinatal period.

2.7 Sample size

Determination of the sample size

$$n = \frac{Z^2 P (1-P)}{E^2}$$

n= minimal sample size

Z= 1.96 for 95% confidence interval

P= prevalence of Perinatal urinary incontinence among pregnant women from 28weeks GA to 7th day after delivery. P value 64% was used from previous studies done at Ethiopia which involved 422 pregnant women following antenatal clinic at university of Gondar hospital

e=precision of sampling error 5% (power of the study 95%)

$$\frac{1.96^2 \times 0.64 (1- 0.64)}{0.05^2}$$

n=354

2.8 Sampling method

A simple random sampling technique was used. The sample obtained from pregnant women from 28 weeks gestation age up to the 7th day after delivery who attended the antenatal clinic and who was admitted to the antenatal ward for the time of data collection, and also those who have been admitted to postnatal ward**.**

2.9 Study variables

2.9.1 Dependent variables.

1. Urinary incontinence as described as

- -Urge incontinence
- -Stress Incontinence
- -Mixed incontinence

2. Quality of life

2.9.2 Independent variables

- -Age
- -No of parity
- -Previous history of UI
- -Mode of delivery
- -BMI
- -Multiple pregnancy

2.10 Data collection

After receiving consent, each candidate received a structured questionnaire with demographic information. An ICIQ-UI SF Tool was given to individuals who were determined to have urine incontinence out of the anticipated 354 participants in order to evaluate their quality of life. There are three section-scored items and one unscored item in this verified tool. was employed to evaluate the impact of urine leakage on quality of life as well as its frequency and severity. A summary score is derived from the sum of the three categories; higher scores suggest more severity and greater influence on quality of life. The scale has proven to have excellent internal consistency dependability among persons living in the community and patients in British urology clinics.

2.11 Data quality assurance.

The data were collected using a standard assessment instrument. Before being finalized, the checklist questionnaire will be pre-tested on 5% of similar facilities (those are not part of the study) to ensure its validity and reliability. Data collectors received intensive training, and the primary investigator reviewed the obtained data for completeness every day at the end of data collecting. Several quality control measures were built into the data entry application. After the data was imported into the SPSS database, all questions were examined again to ensure that the information was entered correctly.

2.12 Tool validity and reliability

2.1.2.1 Tool validity

ICIQ-UI SF is a validated tool for assessing lower urinary symptoms of urinary incontinence, and quality of life in both men and women.

2.1.2.2 Tool reliability

ICQ-UI SF is a self-administered tool, understandable, its components of assessment are attainable. It is a reliable tool for data collection

2.13 Data analysis

The statistical analysis of the data was carried out in the SPSS (Statistical Package for the Social Sciences) version 20 package software.

Prevalence and clinical characteristics

BMI was calculated and the descriptions of BMI, as follows BMI <18.5 will be Underweight, BMI 18.51-24.9 will be Normal, BMI 25-29.9 will be pre obesity and BMI > 30 will be Overweight.

The social-demographic data and clinical characteristics were described as descriptive statistics and categorical data were described by measurements like Frequency tables, graphs, and percentages, and numerical variables, described by mean, median, and standard deviation.

Associated risk factors

For associated risk factors and subtypes of urinary incontinence, the Bivariate logistic regression was used to obtain variables that have an association with urinary incontinence. Multivariate logistic regression for the control effect of confounders

Quality of life

The generalized linear regression used to identify the associated factors with the overall quality of life score from ICIQ-IU SF from the tool

2.14 Ethical issue

Permission from IRB in MUHAS, was obtained to conduct research at Muhimbili national hospital as well as permission from MNH before study is be carried out.

Participants were given consent to be in this study, whereby the confidentiality was observed by giving each participant a number of identifications instead of their names. And the information obtained were handled and stored well before transform into electronic data by principal investigator.

2.15 Study limitation and Mitigation.

Interference with other hospital routine, like during investigation time, time of some procedure to be carried to the patient.

2.16 Dissemination of study

After the research, the results will be disseminated to

-Library of the Muhimbili university of health and allied science

-Urology journal

CHAPTER THREE

3.0 RESULTS

A total of 354 women were approached where all participated in the study. The mean age of participants was 30 years [range 30–34 years]. One hundred seventy-two [48.6%] participants attended High education school and 145 [41.0] had formal employment, married were 304 [85.9%].

Table 1: **Socio-demographic characteristics of pregnant women following pregnant women attending at Mnh [N = 354]**

Characteristics		**Distribution N [%]**
Age group		42 [11.9]
	16-24	115 [32.5]
	25-29	149 [42.1]
	30-34	47 [13.3]
	35-40	1 [.3]
	>41	
Education status		
	No formal education	3 [.8]
	Primary	31 [8.8]
	Secondary	148 [41.8]
	High education	172 [48.6]
Occupation		
	Peasant	9 [2.5]
	Formal employment	145 [41.0]
	petty trader	107 [30.2]
	Retired	2 [.6]
	Unemployed	91 [25.7]
Marital status	Not married	48 [13.6]
	Married	304 [85.9]
	Widower/divorced	2 [.6]

Table 2: **Clinical characteristics of pregnant women following pregnant women attending at Mnh [N = 354]**

Characteristics		**Distribution N [%]**
Parity	Nulliparous	25 [7.1]
	Primiparous	97 [27.4]
	Multiparous	215 [60.7]
	Grandparous	17 [4.8]
Mode of previous delivery	SVD	178 [50.3]
	C/S	132 [37.3]
	Assisted delivery	19 [5.4]
	Missing [Prime]	25 [7.1]
Body mass index	Normal	202 [57.1]
	Pre obesity [overweight]	141 [39.8]
	Obesity	11 [3.1]
Term	Preterm	127 [35.9]
	Term	225 [63.5]
	Post term	2 [.6]

The majority of women, 202 [57.1%] had normal BMI during the current pregnancy. Twenty-five 25 [7.1%] women were primigravid. One hundred seventy-eight 178 [50.3%] women had spontaneous vagina delivery and 132 [37.3%] had caesarian section delivery during their previous delivery. Among 354 pregnant women, 225 [63.6%] of them were term pregnancy, 127 [35.9%] in preterm

The overall proportion of PUI among the participants was 59 [16.7%]. Of all the respondents with PUI 27[45.8%] of term pregnancy reported that they have PUI. From the total women with UI 40 [67.8%] BMI of pre obesity and 16 [27.1%] had normal BMI.

PUI during their previous pregnancy were 27 [45.8%], and 27 [45.8%] were reported in multiple pregnancy.

Table 3: Quality of life among Pregnant women with urine incontinence

Urine incontinence		**Severity affect QOL**			
		Severity affect QOL			
		Slight	**Moderate**	**Severe**	**Very severe**
Urine incontinence	[N59]	17	31	10	1
	% within Urine incontinence	28.8%	52.5%	16.9%	1.7%

From the total of participants having PUI, 28 (49.1%) had SUI, 9 (15.8%) had UUI; MUI, and 1 (1.8%). In overall participant who had PUI, Quality of life were observed to be moderately affected 31 [52.5%], followed by 17 [28.8%] whose QoL was slightly affected, 10 [16.9%] poor QoL, and only 1 [1.7%] very poor quality of life.

[Table 4] Bivariate and multivariate logistic regression of factors associated with PUI among pregnant women attending Muhimbili national hospital

	Bivariate analysis		Multivariate analysis	
Variable	**cOR (95% CI)**	**P-value**	**aOR (95% CI)**	**P-value**
BMI<24.6	Ref	1		
BMI>24.6	4.53 (2.299-8.920)	0.000	1.351 (1.161-1.765)	0.008
Multipara	Ref	1		
Grand multipara	10.08(3.560-28.562)	0.000	1.092 (1.027-1.323)	0.000
Preterm	ref			
Term	.602 (.342-1.060)	.079	1.548 (.773-3.100)	0.218
Delivery SVD	ref	1		
Delivery C/S	.248 (.120-.509)	0.00	5.126 (2.081-12.628	0.000
Multiple preg No	ref	1		
Multiple pregYes	29.8(6.35-140.58)	0.000	15.8 (5.005-73.181)	0.000
Prev Hx C/s No	ref	1		
Prev Hx C/s Yes	2.431 (1.368-4.320)	0.002	.649 (.313-1.345)	0.245

Key factors: cOR – Crude Odds Ratio, aOR adjusted Odds Ratio CI – 95% Confidence Interval

In the bivariate analysis at p value of < 0.25 gestational age, parity, prior history of c/s, MBI, multiple pregnancy, term have shown significant association with PUI

In multivariable logistic regression model, gestational age, parity, prior history of c/s, MBI, multiple pregnancy, term. BMI, multiple pregnancy and parity during perinatal period, were significantly associated with PUI at p value of <0.05. A significant association of UI was found with having normal BMI and with Pre-obesity [AOR 1.351 95% CI 1.161-1.765] and grand multipara with [AOR 1.092 95% CI 1.027-1.323], previous history of caesarian section with [AOR. 5.126 95%CI 2.081-12.628]

CHAPTER FOUR

4.0 DISCUSSION

The present cross-sectional study was intended to assess the prevalence, associated factors of PUI among pregnant women attending Muhimbili national hospital.

The contributing factors that had statistically significant association with PUI were gestational age, parity, Body mass index, Mode of previous delivery, Multiple pregnancy.

In this study, overall prevalence of PUI among pregnant women was found to be 59 (16.7%) which is higher than reported prevalence of study done in, Ethiopia 11.4%.13 The possible reason for this disparity might be due to difference in assessment tool and most of their participants were 30years of age which have less likelihood to develop PUI.

The result of this study found that the prevalence of PUI was relative low compare with studies done in Turkey and Malaysia with prevalence range between 21.1% and 28.1%, respectively This difference could be explained by the different in the use of definition of PUI, study design, and eligibility criteria another observed difference in Turkey could be due to inclusion of third trimester only which has positive correlation with the occurrence of PUI. The additional possible explanation is that due to the increment of sample size utilized in the study done in Turkey.

The results of this study show that SUI is the most common form of UI followed by UUI and MUI (49.1%, 15.8%, and 1.8%), respectively. This finding is consistent with findings done in Tanzania and Ethiopia Some 441/1048 (42.1%) women reported any UI. Among women who stated they had any UI, SUI comprised 39%, UUI 22%, and MUI 39%, (58%, 24.5%, and 12.5%), respectively. The possible reason for this similarity could be intra-abdominal pressure increase during sneezing, coughing, and laughing; as a result of this, the internal pressure on the bladder exceeds the closure of urethral pressure that might be due to PFM weakness as a result of hormonal changes.

This study found that pregnant women with multiple pregnancy were 15.8 times more likely to develop UI compared to the non-multiple pregnancy (AOR: 15.8, p=0.000). The possible reason could be due to increased uterine and fetal weight within the progress toward the third trimester, contributing to increased pressure on bladder and reduced capacity of bladder, which may lead to urine leakage

Regarding the parity of the participants, multiparous pregnant women were 1.092 times more likely to develop UI (AOR: 1.092, p=.001) compared with primigravida pregnant women. The possible reason might be subsequent pregnancy may result in damage to bladder sphincter which can result in PUI

Regarding the BMI of the participants, normal BMI, pre-obesity pregnant women were 1.3 times more likely to develop UI (AOR: 1.34, p=.008) compared with underweight pregnant women. The possible explanation might be hormonal changes, increased uterine weight, and physiological weight gain of women may lead to relaxing and reduced strength of PFMs where weakness increased bladder-neck and urethral mobility, which results in urethral sphincter incompetence which in turn leads to urine leakage.

Regarding the mode of delivery, among participant was shown to have 5.1 times more like to develop PUI (AOR: 5.1, p=0.000) compare to the normal vaginal delivery. This can be explained by indication of caesarian section, where probable was due to obstructed labor, where already the deconfiguration of PFM, could be a possible reason for this.

Secrecy of UI is raised upon the feeling of shame, embarrassment, and fear of discrimination. The other reason might be that urine leakage is considered as normal during pregnancy and may not be differentiated from normal vaginal discharge that occurs during pregnancy

Quality of life was found to be significantly affected with a dominance of 31 (52.5%), followed by slight affect QOL 17(28.8%), 10 (16.9%) demonstrate a poor QOL among the pregnant women who had urine incontinence, the minority being 1 (1.7%) which showed a very poor quality of life.

CHAPTER FIVE

5.0 LIMITATION, CONCLUSION AND RECOMMENDATION

5.1 Limitation

The study assessment of prevalence, quality of life and factors associated with urinary incontinence were done relative short duration of time, although there were significant proportion of perinatal urinary incontinence, and other factors were not feasibly assessed like pelvic floor muscle, due to lack of measurement. Assessment of quality of life should be done during perinatal period and afterward after end of puerperium.

5.2 Conclusion

Perinatal urinary incontinence is significantly affecting morbidity at different levels, even though it's not a life-threatening disease. The burden of UI on daily life activities, sexual function, interpersonal relationships, social interactions and psychological well-being may be substantial. Therefore, it is consensual that patient reported outcomes, including symptom severity assessment and impact on QoL questionnaires, should be an important part of the evaluation, as they reflect the patient's perspective, Thus the examination of the urine incontinence could play a vital role in addressing the complications faced by women during their pregnancy.

5.3 Recommendation

All types of UI significantly affecting pregnant women's QoL. This information is useful in enhancing antenatal management at the primary care level, whereby they should be screened for UI and provided with effective early intervention to improve their QoL.

Health care providers (physiotherapist, midwives, and obstetrician) need to take initiatives and support to address the problem and develop preventive and evidence-based management protocols in maternal health care facilities

Therefore, it is consensual that patient reported outcomes, including symptom severity assessment and impact on QoL questionnaires, should be an important part of the evaluation, as they reflect the patient's perspective, thus the examination of the urine incontinence could play a vital role in addressing the complications faced by women during their pregnancy

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APPENDICES

Appendix I: Consent form

Greeting

My name id Dr Geofrey P, Chiloleti, Mmed Urology student at MUHAS. Im conducting a research concern the proportion, quality of life and associated factors of perinatal urine incontinence among patient attending at MNH

Purpose of the study: is to determine the prevalence quality of life and associated factors of perinatal urine incontinence among patient attending at MNH

What participation involves: If you agree to join the study, you will be asked a number of questions by filling a questionnaire. Some of the information will be accessed from your hospital file or electronic data found in hospital data base

Confidentiality: Confidentiality will be observed and no access will be granted by any unauthorized person

Benefit: The importance through this study can help answer or identify the following area in medical field. May help define in a depth and criticize etiology of these two conditions, this study will help to identify other different factors and others co-morbidities, may also identify the preference in a treatment choice and to raise awareness to the patient to know more the subject condition.

Risk: No expectation of any physical harm or psychological harm will happen to you because of participation to this study.

Right to withdraw: You can stop participating to this study in any time, even after being already given your consent, withdraw from the study will involve no penalty

Contact personal: If you have any inquiry about this study, kindly contact Principal Investigator Dr Geofrey P, Chiloleti, geofrey.sage@gmail.com of Muhimbili university of health and allied science, P.O.BOX 65001 Dar es Salaam. Tel 0657666111

If you have any questions concerning your right as a participant, you may contact

Dr Fransia A, Mushi, supervisor of the study, MUHAS, PO Box 65000, Dar es salaam, Tanzania.

Mobile phone +255 717684110. Email : fransiaarda@gmail.com

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Mobile phone +255 713 292 617. Email : aboudmuhsin@gmail.com

Dr. Nahya Salim Masoud, Director of Research and Publication (DRC) of MUHAS,

contacts P. O. Box 65001, Dar es Salaam, Tanzania. Tel: +255 713 250 074, Email: drp.muhas.ac.tz.

Signature

I have read and understood the content in this form and my question have been answered.

I agree / do not agree to participate in this study

Signature (Participant) ..... Date .....

Signature (Investigator) ..... Date .....

Appendix II: Questionnaire (English version)

Date of admission / Attended .....

1. Age .....
2. Level of education
    a. No formal education
    b. Primary
    c. Secondary
    d. High education
3. Occupation
    a. Peasant
    b. Formal employment
    c. Petty trader
    d. Retired
    e. Unemployed
4. Marital status
    a. Not Married
    b. Married
    c. Widower
5. Para.....living ..... Abortion.....Died .....

6. Gestation Age .....
7. Weight..... Height .....

8. Mode of delivery
    a. SVD
    b. C/S
    c. Assisted VD

9. History of Previous surgery
    a. YES .....
    b. NO
10. History of multiple pregnancy
    a. YES
    b. NO
11. What type of treatment have u received after being found to have incontinence

    .....

    .....

Appendix III: ICIQ UI Short Form

1. 3 How often do you leak urine? (Tick one box)
   never 0
   about once a week or less often 1
   two or three times a week 2
   about once a day 3
   several times a day 4
   all the time 5

2. We would like to know how much urine you think leaks. How much urine do you usually leak (whether you wear protection or not)? (Tick one box)
   none 0
   a small amount 2
   a moderate amount 4
   a large amount 6

3. Overall, how much does leaking urine interfere with your everyday life?
   Please ring a number between 0 (not at all) and 10 (a great deal)
   0 1 2 3 4 5 6 7 8 9 10
   not at all a great deal

4. When does urine leak? (Please tick all that apply to you)
   never – urine does not leak
   leaks before you can get to the toilet
   leaks when you cough or sneeze
   leaks when you are asleep
   leaks when you are physically active/exercising
   leaks when you have finished urinating and are dressed
   leaks for no obvious reason
   leaks all the time

Appendix Iv: Dodoso

Tarehe mahudhurio / Kulazwa .....

1. Miaka .....
2. Kiwango cha Elimu
    a. Hajasoma
    b. Elimu ya msingi
    c. Elimu ya sekondari
    d. Elimu ya chuo

3. Kazi
    a. Mkulima
    b. Mwajiriwa
    c. Mfanyabiashara
    d. Mstaafu
    e. Hana ajira

4. Hali ya ndoa
    a. Ameolewa
    b. Hajaolewa
    c. Ajuza

5. Amezaa mara ngapi.....walio hai ..... Mimba zilizo haribika.....walio fariki

6. Umri wa mimba.....

7. Uzito..... Urefu .....

8. Njia ya kujifungua
    a. Kawaida
    b. Upasuaji
    c. Msaada wa vifaa vya kuzalisha

9. Historia ya upasuaji
    a. Ndio .....
    b. Hapana .....

10. Historia ya mapacha
    a. Ndio
    b. Hapana

11. Je ni aina gani ya tiba umekua ukiipata baada ya kua na tatizo la mkojo kutoka?
    .....

Appendix V: ICIQ UI Short Form (Swahili version)

1. Mara ngapi mkojo unatoka wenyewe bila kujizuia? (Tick one box)
   Hamna kabisa 0
   Mara moja kwa wiki au hamna kabisa 1
   Mara 2 au 3 kwa week 2
   Mara moja kwa siku 3
   Mara kadhaa kwa siku 4
   Muda wote 5

2. Tungependa kujua kiasi gani mkojo unadhani Unatoka wenyewe. (Uwe una vaa kizuizi chochote, kama chupi, kitambaa, pampas au la)
   Hapana 0
   Kiwango kidogo 2
   Kiwango cha kati 4
   Kiwango cha Juu 5
   Kiwango kikubwa kabisa 6

3. Kwa ujumla, tuambie namna mkojo unavyotoka wenyewe, jinsi unavyo haribu ratiba zako za kila siku?
   Zungushia mduara kuanzia 0 (Hapana kabisa) 10 (Huaribu kwa Kiwango kikubwa)

   0 1 2 3 4 5 6 7 8 9 10

4. Wakati gani mkojo unatoka wenyewe? (Onesha sehem inayolingana hali yako)
   Hautoki kabisa – urine does not leak
   Unatoka kabla ya kufika chooni
   Unatoka ukikohoa au kupiga chafya
   Unatoka wakati nimelala
   Unatoka napofanya kazi au mazoezi
   Unatoka nikishamaliza kukojoa na kuvaa
   Unatoka bila sababu yeyote
   Unatoka wakati wowote

Appendix VI: Ethical clearance

UNITED REPUBLIC OF TANZANIA

MINISTRY OF EDUCATION, SCIENCE AND TECHNOLOGY

MUHIMBILI UNIVERSITY OF HEALTH AND ALLIED SCIENCES

OFFICE OF THE DIRECTOR – RESEARCH, PUBLICATIONS AND INNOVATIONS

Ref. No.DA.282/298/01.C/ Date: 17/10/2023

MUHAS-REC-10-2023-1945
Geofrey P Chiloleti
College of Medicine
MUHAS

RE: APPROVAL FOR ETHICAL CLEARANCE FOR A STUDY TITLED: PREVALENCE, QUALITY OF LIFE AND FACTOR ASSOCIATED WITH PERINATAL URINARY INCONTINENCE AT MUHIMBILI NATIONAL HOSPITAL

Reference is made to the above heading.

I am pleased to inform you that the Chairman has on behalf of the University Senate, approved ethical clearance of the above-mentioned study, on recommendations of the Senate Research and Publications Committee meeting accordance with MUHAS research policy and Tanzania regulations governing human and animal subjects research.

APPROVAL DATE: 17/10/2023
EXPIRATION DATE OF APPROVAL: 17/10/2024

STUDY DESCRIPTION:
Purpose:
The purpose of this cross-sectional observation study is to establish the foundation of Perinatal urinary incontinence awareness in our facility, and possibly knowing the burden and associated risk factors, pay more attention to the attending physician in a such patients.

The approved protocol and procedures for this study is attached and stamped with this letter, and can be found in the link provided:
https://irb.muhas.ac.tz/storage/Certificates/Certificate%20-%2015001.pdf and in the MUHAS archives.

The PI is required to:

1. Submit bi-annual progress reports and final report upon completion of the study.
2. Report to the IRB any unanticipated problem involving risks to subjects or others including adverse events where applicable.
3. Apply for renewal of approval of ethical clearance one (1) month prior its expiration if the study is not completed at the end of this ethical approval. You may not continue with any research activity beyond the expiration date without the approval of the IRB. Failure to receive approval for continuation before the expiration date will result in automatic termination of the approval for this study on the expiration date.
4. Obtain IRB amendment (s) approval for any changes to any aspect of this study before they can be implemented.
5. Data security is ultimately the responsibility of the investigator.
6. Apply for and obtain Data Transfer Agreement (DTA) from NIMR if data will be transferred to a foreign country.
7. Apply for and obtain Material Transfer Agreement (MTA) from NIMR, if research materials (samples) will be shipped to a foreign country.
8. Apply for and obtain permission to publish the results from National Institute for Medical Research. The application should be before submitting to a publisher and not concurrently through the email publications@nimr.or.tz.
9. Any researcher, who contravenes or fail to comply with these conditions, shall be guilty of an offence and shall be liable on conviction to a fine as per NIMR Act No. 23 of 1979, PART III section 10 (2)
10. The PI is required to ensure that the findings of the study are disseminated to relevant stake holders.
11. PI is required to be versed with necessary laws and regulatory policies that govern research in Tanzania. Some guidance is available on our website https://drp.muhas.ac.tz/.

Dr. Nahya Salim Masoud,
Chairperson, MUHAS Research and Ethics Committee