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FREQUENCY OF URINARY INCONTINENCE (UI) AND ITS ASSOCIATED RISK FACTORS IN PREGNANT POPULATION

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ABSTRACT

Objective: To study the frequency of urinary incontinence and to identify its associated risk factors in pregnancy.
Study Design: A descriptive cross sectional study.
Place and Duration of Study: Pak Emirates Military Hospital Rawalpindi, from Feb and Mar 2017.
Material and Methods: A descriptive cross sectional study was conducted at tertiary care hospital of Pakistan on 399 pregnant women having antenatal care during third trimester of pregnancy. A well designed questionnaire gathered data on demographic variables, presence or absence of urinary incontinence (UI) in current pregnancy and its associated risk factors. Data were analyzed using SPSS version 20. Descriptive statistics and logistic regression analysis were performed. A $p<0.05$ was considered statistically significant.
Results: The overall prevalence of urinary incontinence in our pregnant population was found to be 32.1%. Majority of the participants belonged to the age group of 20-29 years (72.7%) and a weight of 51-60kg (39.6%). A total of 78.4% were parous women with vaginal delivery as predominant mode of previous delivery. One hundred and fifty five (38.8%) of the participants had history of on and off constipation and only 33 (8.3%) experienced pre-pregnancy UI. Of all the patients who had UI, predominant type was stress UI (56%) followed by mixed (32%) and urge (12%) UI. Constipation ($p=0.001$), pre-pregnancy UI ($p<0.01$), previous postpartum UI ($p<0.01$) and family history of UI ($p=0.01$) had highest association with UI in pregnancy.
Conclusion: Almost one third of the women in our study group were found to be affected by UI. By discussing and imparting knowledge about preventive strategies during antenatal period may improve the quality of life of pregnant women.

Keywords: Pregnancy, Prevalence, Risk factors, Urinary incontinence.

INTRODUCTION

Urinary incontinence (UI) is defined as involuntary urine leakage which is a very distressing condition affecting quality of life and is especially prevalent amongst pregnant population due to physiological processes of pregnancy which includes hormonal changes, mechanical changes or both. Its prevalence varies between 18% to 75% amongst pregnant population[1].

The prevalence of UI during pregnancy in Europe is between 26-71%[2], North & South America 43-63%[3] and in Pakistan 45%[4].

There are several types of urinary incontinence[5] but the commonest ones are stress, urge and mixed incontinence.

Pregnant women suffering from urinary incontinence have lower quality of life due to its embarrassing nature and it usually worsens with advancing gestation[6].

The current high prevalence of UI in pregnant population warrants urgent attention by physicians towards its prevention and treatment strategies.

UI in pregnancy can predict the presence of same condition many years after puerperium[7] which indicates that this condition remains unresolved after pregnancy in many cases and the female sufferers take very long time to report the presence of this condition. Statistical data showed that around 50% of the females develop urinary incontinence during their life time[7].

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It does not cause mortality but morbidity is increased in the form of constant skin irritation and local infection along with distressing psychological consequences[8].

Many epidemiological studies have been conducted to identify risk factors of UI which includes age, BMI, parity, constipation, pregnancy, perineal damage during childbirth, urinary incontinence before pregnancy, family history of urinary incontinence and several others[9] however the major risk factors are considered to be pregnancy and childbirth related events. In pregnancy, at what time UI develops and what are the determinants that predispose this condition is not clearly understood but with the sufficient knowledge of association of this condition with pregnancy and its determinants can help in early identification of females with greater chances to develop this condition and thus changes in our approach to the antenatal care. The current prevention and treatment strategy of UI by international continence society includes rehabilitation of pelvic floor muscles.

The information available on UI in pregnancy and its associated risk factors is available from western cultures. There is limited data available from non-western cultures to investigate its prevalence so a study from our population would add value to the available information as it will have implications on management specific for the population assessed. So keeping in view the scarcity of local data, this study is designed to identify the frequency of UI and its associated risk factors in pregnant population following antenatal care at a tertiary care hospital of Pakistan. Moreover, it also aimed to characterize frequency of UI according to its type and at what time in pregnancy it starts to develop.

MATERIAL AND METHODS

After getting approval from hospital's ethical committee, this descriptive cross sectional study was conducted during the months of February and March 2017 on 399 pregnant females who were receiving antenatal care during third trimester in the outpatient department of Obstetrics and Gynaecology at Pak Emirates Military Hospital Rawalpindi.

Verbal informed consent was taken from the participants after explaining objectives of the study before their recruitment in the study and their acceptance to be a part of study was totally voluntary. Sampling technique was non-probability consecutive sampling.

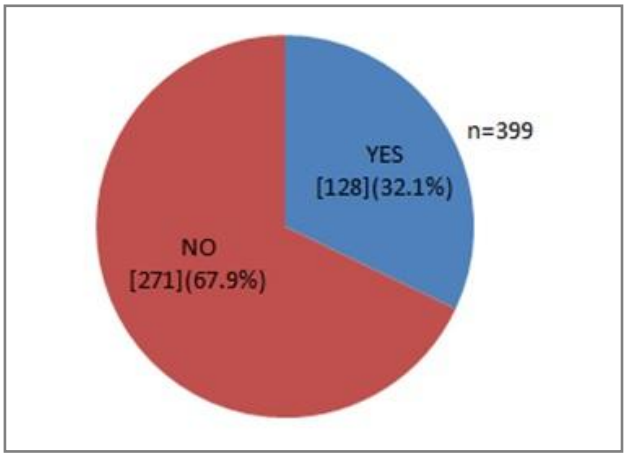

Figure-1: Have you ever experienced urinary incontinence in current pregnancy?

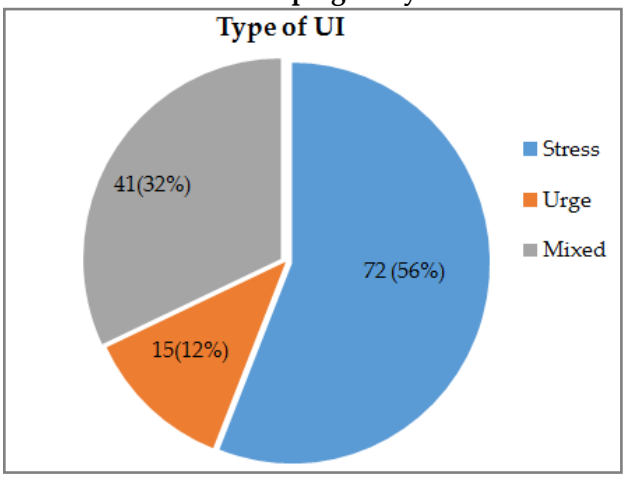

Figure-II: Type of UI (N=128).

A simple and brief questionnaire was designed after extensive literature review and got validated by experts. The questionnaire gathered data on demographic variables (age, weight, parity), presence or absence of urinary incontinence in current pregnancy and its associated risk factors (history of constipation,

pre pregnancy UI, type of previous delivery, history of postpartum UI, family history of UI).

The participants were interviewed by female interviewers after providing privacy to the participants and the response was entered on questionnaire by the interviewers.

"Urinary incontinence" (UI) was defined by any involuntary urine leakage during pregnancy. "Stress urinary incontinence" (SUI) as involuntary urine leakage by exertion/coughing/sneezing. "Urge urinary incontinence" (UUI) as involuntary urine leakage along with urgency. "Mixed urinary incontinence" (MUI) as involuntary urinary leakage with exertion/cough/sneeze and urgency both.

UI was confirmed by direct questioning from women if they experienced any urine leakage during current pregnancy. It was not confirmed by any pelvic examination because women were reluctant for examination. Advanced investigations like urodynamic studies for urge or mixed incontinence were not conducted because of pregnancy.

The questionnaires were counter-checked by the author regularly for its completeness.

Data were analyzed using SPSS version 20. Descriptive statistics were performed for sociodemographic characteristics and logistic regression analysis were performed for association of demographic variables with urinary incontinence.

A p-value<0.05 was considered statistically significant.

RESULTS

A total of 399 participants volunteered to be a part of study during the study period. Majority of the participants belonged to the age group of 20-29 years (72.7%) and a weight of 51-60kg (39.6%).

Seventy eight percent were parous women with spontaneous vaginal delivery (SVD) as predominant mode of previous delivery. One hundred and fifty five (38.8%) of the participants had history of on and off constipation and only 33 (8.3%) experienced pre-pregnancy urinary incontinence. Previous history of postpartum UI and family history of UI were present in minority (5% & 7.5%) of the patients.

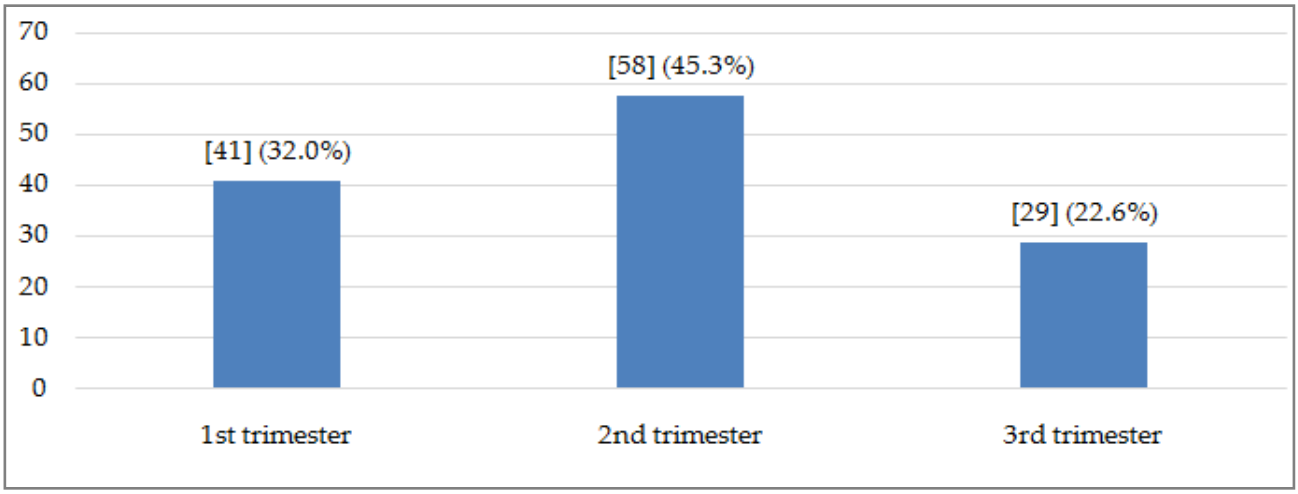

Figure-3: First episode of UI experienced.

The overall frequency of UI in our pregnant population was found to be 32% (fig-1). Of all the patients who had UI, predominant type was stress UI (56%) followed by mixed (32%) and urge (12%) UI (fig-2). First episode of UI was experienced by majority of the participants (45.3%) during second trimester of pregnancy (fig-3).

Logistic regression analysis showed that constipation (p=0.001), pre-pregnancy UI

(p<0.01), previous postpartum UI (p<0.01) and family history of UI (p=0.01) had highest association with UI in pregnancy (table-I).

Pregnant women who had constipation were five times more likely to experience UI in pregnancy than those without constipation. If the woman had UI before pregnancy, she was nine times more likely to have UI in next pregnancy than those without UI before pregnancy. Previous postpartum UI increases the risk of UI seven times in next pregnancy and if the pregnant woman has family history of UI, she was five times more likely to experience UI during pregnancy than those without family history of UI.

Table: Association of UI with selected variables among pregnant patients for n=399.

	Characteristics	Distribution N (%)	Urinary incontinence (UI) Yes (%)	No (%)	OR (95% CI)	*p*-value
Age						
	20-29	290 (72.7)	82 (20.6)	207 (51.9)	0.35 (0.01-10.9)	0.07
	30-39	107 (26.8)	45 (11.3)	62 (15.5)	0.21 (0.05-3.8)	0.08
	40-49	2 (0.5)	0 (0)	2 (0.5)	0.18 (0.02-1.7)	
Weight						
	41-50	30 (7.5)	9 (2.3)	21 (5.3)	0.5 (0.5-1.8)	0.31
	51-60	158 (39.6)	51 (12.8)	107 (26.8)	0.68 (0.2-1.9)	0.48
	61-70	131 (32.8)	35 (8.8)	96 (24.1)	0.4 (0.-1.1)	0.09
	71-80	60 (15.0)	22 (5.5)	38 (9.5)	0.36 (0.1-1.15)	0.08
	>80	20 (5.0)	11 (2.8)	9 (2.3)	0.27 (0.13-3.8)	0.05
Parity						
	0	85 (21.3)	15 (3.8)	70 (17.5)	3.07 (0.1-88.4)	0.23
	1-3	273 (68.4)	94 (23.6)	179 (44.9)	2.03 (1.02-4.8)	0.09
	>=4	41 (10.3)	19 (4.8)	22 (5.5)	0.76 (0.1-2.6)	0.06
H/O Constipation	Yes	155 (38.8)	69 (17.3)	86 (21.6)	5.7 (0.27-123.6)	0.001
	No	244 (61.2)	59 (14.8)	185 (46.4)		
Pre-pregnancy UI	Yes	33 (8.3)	27 (6.8)	6 (1.5)	8.9 (3.4-23.0)	<0.01
	No	366 (91.7)	101 (25.3)	265 (66.4)		
Previous delivery n=314	SVD	169 (53.8)	58 (18.5)	111 (35.4)	0.31 (0.1-0.8)	0.02
	Instrumental	5 (1.6)	3 (1.0)	2 (0.6)	0.62 (0.2-1.37)	0.24
	LSCS	121 (38.5)	41 (13.1)	80 (25.5)	0.11 (0.05-1.29)	<0.01
	SVD + LSCS	11 (3.5)	4 (1.3%)	7 (2.2)	0.8 (0.19-2.7)	0.67
	Instrumental + LSCS	8 (2.51)	8 (2.5%)	0	0.9 (0.03-4.8)	0.08
H/O postpartum UI	Yes	20 (6.4)	16 (5.1)	4 (1.3)	7.8 (2.4-25.0)	<0.01
	No	294 (93.6)	98 (31.2)	196 (62.4)		
Family H/O UI	Yes	30 (7.5)	22 (5.5)	30 (7.5)	5.5 (2.1-14)	<0.01
	No	369 (92.5)	106 (26.6)	369 (92.5)		

DISCUSSION

This study highlighted a very distressing issue of pregnant women and due to its effects on physical and psychological wellbeing, urinary incontinence (UI) is now becoming a global problem.

In our study the prevalence of urinary incontinence in pregnancy was found to be 32.1% which is in line with the majority of published data which ranges between 26-

71%[2,4,10,11]. However it was more prevalent in our population than Turkey (21.3%)[12] and Ethiopia (11.4%)[9] but slightly less prevalent than New york (52%)[10].

Out of those who experienced UI, the predominant type was SUI (56%) followed by MUI (32%) and UUI (12%) which is in agreement with the studies by Abdullah *et al*[11] and Franco *et al*[13].

Majority of the participants who had UI experienced first episode of UI during second trimester (41%) followed by first (37%) and third trimesters (22%) which indicates that this problem is commonly found in second trimester of pregnancy[13,14] but many women first develop it in first half of pregnancy. It highlights that the effect of hormone related changes in pregnancy on pelvic floor muscle strength is more than the effect of rapidly increasing size of gravid uterus in third trimester.

When the association of different demographic variables were studied in our study, it was found that age, BMI, parity and mode of previous deliveries were not significantly associated with UI in pregnancy. A study conducted by Martin *et al* in New york[13] found results similar to our study but it was contrary to the studies by Tanawattanacharoen *et al*[15] and Kok *et al*[16] which revealed association of increasing age and BMI with UI in pregnancy. The difference in results can be explained by the fact that majority of the population in our study belonged to a younger age group and were non-obese.

According to Bekele *et al*, constipation increases the risk of UI in pregnancy by 7-12 fold[9] which is in line with our results which found significant association of constipation with UI in pregnancy [OR 5.7 (CI 0.27-123.6)].

The present study revealed that women are 9 times more likely to experience UI in pregnancy if there is pre-pregnancy UI. Riesco *et al* explained that prior UI can best explain development of UI in the start of pregnancy[17]. Sangsawang in his literature review found pre-pregnancy UI is strongly linked to SUI in pregnancy[18]. The present study showed that previous postpartum UI is significantly associated with UI in pregnancy and it increased the risk by 8 times in pregnancy. Hernández *et al* highlighted that UI in pregnancy and postpartum period has got significant association with BMI and it decreases in women who lost weight within 6 months postpartum[19].

Similar to Spanish and Dutch studies which found significant association of family history of UI with UI during and after pregnancy[20,21], our study revealed that family history of UI increases the risk of UI in pregnancy by 5.5 times. Lince *et al* looked into the genetic susceptibility and hereditary factors and highlighted significant association of family history of UI with pelvic floor muscle disorders[22].

CONCLUSION

Almost one third of the women in our study population were found to be affected by UI. By discussing and imparting knowledge about preventive strategies during antenatal period may improve the quality of life of pregnant women.

CONFLICT OF INTEREST

This study has no conflict of interest to be declared by any author.

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