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PREVALENCE OF URINARY INCONTINENCE AMONG PREGNANT WOMEN; EXPERIENCE OF A SINGLE TERTIARY REFERRAL CENTER IN SRI LANKA

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ABSTRACT

Background: Urinary incontinence can affect women throughout their lives. But there is an increased risk for urinary incontinence during pregnancy due to physiological and anatomical changes. **Objectives**: This study aimed to determine the prevalence and risk factors for urinary incontinence among healthy pregnant women in Sri Lanka. **Methodology**: This cross-sectional descriptive study was done in 477 pregnant women attending Obstetrics clinics at Teaching Hospital, Peradeniya, Sri Lanka. Interview based - Modified questionnaire on urinary incontinence including the questions of International Consultation on Incontinence Questionnaire was used for assessment and data was analyzed by multiple regression and chi-square test. Level of statistical significance was considered as $p< 0.05$ for all analysis. **Results**: Urinary incontinence was seen in 12.99% of pregnant women aged 28.12 ± 5.23 years (mean ± standard deviation) and 79.03% of them were suffering from stress urinary incontinence. Mixed and urge incontinence were 17.74% and 3.22% respectively. Parity, mode of delivery, gestational age, pre pregnant body mass index, age, birth weight of previous babies were the significant associated factors with urinary incontinence during pregnancy. **Conclusion**: The risk of developing urinary incontinence in pregnant women in Sri Lanka is increased when the risk factors for urinary incontinence are present. Understanding these causative factors can be useful for health care professionals to help preventing urinary incontinence during pregnancy and the postpartum period.

KEYWORDS: Urinary Incontinence**,** pregnancy**,** prevalence, risk factors, quality of life.

INTRODUCTION

Urinary incontinence is loss of urine unintentionally, and the patients with urinary incontinence are not being able to hold urine in their bladder because of the decreased voluntary control over their urinary sphincters ending up with involuntary leakage of urine.[1]

There are several types of Urinary Incontinence including stress incontinence, urge incontinence, overflow incontinence and mixed incontinence. Stress incontinence occurs when there is increased intra abdominal pressure which is exerted on bladder by coughing, sneezing, exercising, lifting weight or laughing. Urge incontinence can be defined as passage of urine as soon as one gets the need to urinate. It is caused by bladder over-activity due to infections, neurological disorders or diabetes. Frequent or constant dribbling of urine is experienced in overflow incontinence. Here bladder doesn't empty completely. If someone experience more than one type of incontinence, it is called mixed incontinence.[2]

The prevalence of urinary incontinence in Asian countries has been reported to be about 14.6% among females and 6.8% among males.[3] There is an increased risk among females, because of pregnancy, child birth and menopause which can cause disturbance to the pelvic floor muscles. Weak bladder muscles, overactive bladder muscles, old age, history of pelvic surgeries, bladder out flow obstruction, neurological disorders can also be causes for urinary incontinence while gender, age, being overweight, smoking, family history are also risk factors for urinary incontinence.[4]

Expanding uterus and fetal weight increases the pressure over the pelvic organs throughout pregnancy and also with changing hormonal levels during pregnancy can contribute to urinary incontinence.[5] Progesterone level is increased and oestrogen, relaxin, collagen levels are decreased during this period and it may lead to weakening of the pelvic floor muscles which are commonly encountered physiological changes during pregnancy.[6] When relaxin levels decrease the urethral pressure, urethral epithelium may decrease. Because of

these changes, pelvic floor muscles strength and sphincteric functions are decreased. The weakness of muscle causes incompetence of urethral sphincter and bladder neck.[7] Bladder capacity is decreased due to the added direct pressure by the fetal weight in the uterus. Intra vesicle pressure exceeds the pressure of urethral closure and then urine leaks. Besides an increase in intra-abdominal pressure during coughing, sneezing, laughing, moving contribute to the urine leakage.[8] Urinary incontinence can be managed with conservative treatment methods such as weight loss, fluid management, bladder training and pelvic floor muscle strengthening.[5]

The aim of the study is to obtain the prevalence of urinary incontinence among pregnant women in Sri Lanka. Having a knowledge on prevalence of urinary incontinence, causative factors can be useful for both general population and health professionals to deliver more informed counseling to the patients and encourage for therapeutic options.

MATERIALS AND METHODS

Methodology

This descriptive cross-sectional study was conducted among pregnant women attending Obstetrics clinics at Teaching Hospital, Peradeniya, Srilanka to obtain the prevalence of urinary incontinence among pregnant women and it was conducted over one month of period. This study was approved by Ethical Review Committee, Faculty of Medicine, University of Peradeniya. Subjects who had given consent were asked questions of Modified questionnaire on urinary incontinence including the questions of International Consultation on Incontinence Questionnaire- Short Form. Women, who had reported urinary incontinence before pregnancy, were excluded from the study. Pilot study was conducted with 21 pregnant women who were not included in the study sample and minor corrections were made following the pilot study. Questions were asked by trained investigators and women's responses were recorded. The interviews lasted approximately for 10-15 minutes.

Data analysis

Data was analyzed using SPSS, version 20 statistical software. Prevalence of urinary incontinence was calculated by the proportion of women indicating any leakage on queries in the ICIQ-SF. Risk factors for urinary incontinence were initially evaluated using chi-square test to analyze the association of discrete variable with presence of urinary incontinence among pregnant women. Multiple regression analysis was used for further analysis to find out the effects of potential risk factors. Level of statistical significance was considered as $p< 0.05$ for all analysis.

RESULTS AND DISCUSSION

The sample consisted of 477 pregnant women who attended the obstetrics clinic at Peradeniya Teaching Hospital during the period of data collection. The mean age of the study sample was 28.12 ± 5.23 years (mean ± SD), the mean of gestational weeks 20.86 weeks and mean body mass index was 21.098 kgm^{-2}. The prevalence of urinary incontinence was 12.99% among pregnant women and 79.03% of them were suffering from stress urinary incontinence. Urge and mixed incontinence were 3.22% and 17.74% respectively. Stress incontinence was more common during second and third trimesters and it has increased over the course of pregnancy. Mixed incontinence has been reported only during the third trimester. Mean of gestational weeks of women with mixed incontinence was 32.125 weeks.

Table 1: Prevalence of urinary incontinence and its types.

Type of urinary incontinence	Frequency	Percentage %
No urinary incontinence	415	87.0
Stress urinary incontinence	49	10.27
Mixed urinary incontinence	11	2.3
Urge urinary incontinence	2	0.4

Potential risk factors for incontinence in the women with and without urinary incontinence are summarized in table 2 and 3.

Table 2: Risk factors for urinary incontinence.

Variables	Value	Degree of freedom	Asymptotic significance
Parity	80.363	4	<0.05
Mode of delivery	15.047	2	<0.05
trimester	21.364	2	<0.05

Table 3: Regression analysis for potential risk factors.

Variables	Model Summary		ANOVA				Co-efficients	
			Degree of Freedom		F value	Significance	t value	Significance
	R	R^2	regression	residual				
BMI	0.508	0.258	1	475	165.419	<0.05	12.862	<0.05
Age	0.117	0.140	1	475	6.540	<0.05	02.557	<0.05
Gestational weeks	0.194	0.038	1	475	18.607	<0.05	04.314	<0.05

Birth weight	0.312	0.098	1	475	49.120	<0.05	07.009	<0.05

Based on the results of table 4, the majority of the patients who were incontinent, has suffered as it interfered with their daily routines.

Table 4: Five components of quality of life of pregnant mothers with urinary incontinence.

variables	Model Summary		ANOVA				Co-efficients	
			Degree of freedom		F value	significance	t value	significance
	R	R^2	regression	residual				
Social	0.830	0.689	1	475	1052.08	<0.05	32.436	<0.05
Work	0.859	0.737	1	475	1333.49	<0.05	36.517	<0.05
Sexual	0.765	0.585	1	475	0669.32	<0.05	25.871	<0.05
Financial	0.752	0.566	1	475	0618.79	<0.05	24.876	<0.05
Family	0.812	0.659	1	475	0919.12	<0.05	30.317	<0.05
Overall	0.834	0.696	1	475	1089.27	<0.05	33.004	<0.05

Leakage of urine in the later part of pregnancy was reported by a large proportion of women with incontinence. Symptoms of moderate to high severity were reported by 70.2% of women with urinary incontinence. 42.6% of them wore sanitary pads and 42.6% used facial or toilet tissues and others changed their underwear with each episode. 34% of participants could never postpone urination, 40.4% could for one to five minutes and 25.5% was able for five to ten minutes. Majority (91%) was not be able to stop the mid stream of urine while urination.

In this population of pregnant women, the prevalence of any type of incontinence was 12.99%. The most common type of urinary incontinence during pregnancy was stress incontinence (10.27%) and urge incontinence was the least (0.4%). Mixed incontinence was reported by 2.3%. According to the literature, the true prevalence of incontinence during pregnancy is still unknown. Though there are many studies on prevalence of stress urinary incontinence during pregnancy, the results vary depending on methodology, definition of urinary incontinence, way of evaluation; questionnaire. Most of the studies focused on Western countries. Only few studies were carried out in Asia, especially in South Asia.[9] There were no published studies in Sri Lanka regarding incontinence during pregnancy.

A large population based study done in China[10] found a lower prevalence of urinary incontinence compared with Europe. but it was still high among the pregnant population; 26.7% of pregnant women presented with urinary incontinence, 18.6% with stress urinary incontinence, 4.3% with mixed urinary incontinence and 2% with urge urinary incontinence. Another study done in India showed that the prevalence of stress urinary incontinence, mixed urinary incontinence and urge urinary incontinence was 19.2%, 3.8% and 2.9% respectively.

In present study, the highest incidence of urinary incontinence was reported in second and third trimester as the authors reported prevalence was highest in third trimester, followed by in the second trimester and then first trimester. And also, it was increased with gestational age which is similar to the previous studies.[11] Based on the results, mixed incontinence was more prevalent during the third trimester than the second trimester. During pregnancy, uterine weight not only exerts pressure on bladder but also it irritates the bladder. Normal capacity of the bladder is changed with the advancement of pregnancy from 410ml to 272ml. because descent of the presenting part of fetus has an additional effect on bladder irritation.[12]

In our study, pregnant women with urinary incontinence had higher body mass index than the women without urinary incontinence. The risk of developing stress urinary incontinence increased with increasing prenatal body mass index.[10] Liang et al[11] found that women with a pre-pregnancy body mass index of 30 kgm^{-2}< were at increased risk of developing stress urinary incontinence during pregnancy. Another study reported that women with urinary incontinence first occurring during pregnancy had a body mass index> 25kgm^{-2}.[13] Increased maternal weight correlated with increased intra- abdominal pressure.[14,15] Obesity or higher body mass index before pregnancy is a potentially modifiable factor for urinary incontinence. Therefore weight reduction may be an effective treatment option. Weight loss by practising healthy behavioral changes can significantly improve stress urinary incontinence.[16]

Pregnancy is one of the major risk factors for urinary incontinence as there is a significantly higher prevalence of stress urinary incontinence in pregnant women than in non-pregnant women. Physiological changes during pregnancy may lead to low strength of pelvic floor muscles and development of stress urinary incontinence. Pelvic floor muscle strengthening is one of the best methods as it helps to increase the sphincter function and peri-urethral muscles. As shown in previous studies, pelvic floor muscles strengthening exercises are effective for prevention of urinary incontinence during pregnancy.[5]

CONCLUSION

The prevalence of urinary incontinence during pregnancy is higher than the non-pregnant state, mainly due to stress and mixed urinary incontinence. Although this

occurrence is low when compared to the other studies, it is important to increase awareness about its occurrence and enhancing the competency of health care providers to recognize these symptoms, counsel and offer treatments like pelvic floor strengthening exercises. Further studies should be done, because identification of the type of urinary incontinence was based on limited inventory symptoms querried by the ICIQ-SF and no urodynamic study was carried out to verify the urinary incontinence. Other than, the study sample was selected from only one hospital, which may limit generalizability of the results.

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