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Original Research Article

Prevalence of Urinary Incontinence among Pregnant Women: A Cross-Sectional Study in the Outpatient Department of Al-Ain Hospital

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Abstract

Our purpose is to determine the prevalence of urinary incontinence and its relation to various factors among pregnant women in the local population. A prospective cross-sectional study was conducted among 105 pregnant women attending routine antenatal care (ANC) in Al Ain Hospital. Participants were screened for urinary incontinence using the International. Consultation on Incontinence Questionnaire -Urinary Incontinence (ICIQ-UI Short Form). English and Arabic Versions. Of 105 pregnant women, 49% (n=51) complained of Urinary Incontinence. Stress incontinence being the most common type accounting for 52% women, followed by Urge incontinence with 42%. 50% women reported leaking no more than once a week; in 76% of them the volume was small in amount. Majority (60.4%) of the women reported that incontinence had no or minimum effect on their quality of life.The incidence of incontinence increased with advanced age where 65% of the older age group (> 35 years) complained of UI compared to 42% of the younger age group (≤35 years) (P = 0.027). Urinary incontinence was experience more in multiparous women compared to primiparous (p=0.034). Also, women with multiple vaginal deliveries had more UI compared to Csections (P = 0.012). There was no significant correlation between the presence of UI and other factors such as Gestational Diabetes Mellitus, Hypertension, Urinary tract infections and Constipation. In conclusion, a significant proportion of pregnant women experienced urinary incontinence which was not reported to their primary care providers. Therefore, more education and awareness must be enforced to ensure early detection and management.

Keywords: Urinary incontinence, Stress incontinence, Pelvic floor muscle, Pelvic floor disorder, urinary tract infection, pregnancy.

INTRODUCTION

Urinary Incontinence (UI) is defined by the International Continence Society as 'the complaint of any involuntary leakage of urine [1]'. It is part of a broader category of disorders know as Pelvic Floor Disorders (PFDs), which also include pelvic organ prolapse (POP), incontinence of stool, other abnormalities of the lower urinary and gastrointestinal tract. It may result from multiple physiological and pathological causes. UI may be a patient complaint or diagnosed during evaluation by the physician. Urinary frequency is one of the first symptoms to present in pregnancy. Some women even confuse urine leakage with rupture of membranes [2]. Studies have shown that experiencing UI during pregnancy is a typical occurrence and is risk factor for persistence of the problem later in life [2, 3]. However, the prognosis is generally favourable [4]. There are three main types of incontinence identified, namely, stress incontinence, urge incontinence and mixed incontinence [5-7]. Stress urinary incontinence (SUI), is defined as the complaint of involuntary loss of urine on effort or physical exertion or sneezing or coughing and considered the most common type in pregnant women [8, 1]. UI is estimate to affect 50% of American women during their lifetime. Despite this prevalence, two- thirds of women do not address this issue due to the social stigma, embarrassment and lack of information and awareness that help is available [5]. Till date not much research has been carried out on urinary incontinence in the United Arab Emirates. Through this research we would like to determine the presence of urinary incontinence in pregnant women. This information can be used by

physicians involved in the care of pregnant women to provide better counselling. Women can be given appropriate information regarding the risk factors that lead to UI and their prevention and treatment during pregnancy. As well as, education programs can be established to improve the general attitude towards the problem [9]. UI during pregnancy is generally a self-limiting condition. The prevalence has varied worldwide, stress incontinence more than urge incontinence accounting between 32% to 67% during pregnancy. Another prevalence study conducted in Turkey revealed a prevalence rate of 16.4% to 49.9%. Also, the overall prevalence of UI in a study of pregnant women by Kocaoz *et al*. was 27% [2, 10]. The prevalence was found to be maximum during pregnancy, most during the third trimester and decreases gradually postpartum. Prevalence in pregnancy was found to be a predictor of UI even at 5 years post-delivery irrespective of the mode of delivery [2, 6, 10]. During pregnancy a number of alterations in the maternal anatomy, physiology and biochemistry occur to accommodate the growing fetus. Pregnancy related hormones also play a role, there is a decrease in the levels of relaxin and collagen and persistently raised progesterone due to pregnancy [2, 9]. Although no direct correlation was found with the increase in progesterone levels to causing urethral weakness, it causes smooth muscle relaxation throughout the body, including the ureter, bladder and urethra. Relaxin plays a vital role in maintaining urethral pressure, during the second trimester there is a drop in relaxin levels which lead of decreased in urethral pressure [4, 11]. A research conducted by Losif and colleagues in 1980, using urethrocystometry on primigravidas, reported that bladder pressures increased progressively from early pregnancy till term, at the same time the intra-urethral pressure rises. This maintains a balance between the two and continence is maintained. Despite this physiological mechanism, at least 50% of women experience some degree of urinary incontinence by the third trimester [2, 5, 12]. Towards the end of the pregnancy, the mechanical effects of the growing uterus and fetus lead to a decrease in bladder capacity. The urinary bladder gets displaces upward and flattened in the anteroposterior direction converting its normal convex surface to concave [7]. Normal bladder capacity in the first trimester in 410 ml, however by the third trimester is reduced to 272 ml [5]. The increasing weight of the uterus on the bladder, the fetal growth and descent of the presenting part into the pelvis increases the pressure on the pelvic floor muscles (PFM) and cause weakness. This weakness causes bladder neck and urethral mobility, further leading to reduction in strength of the urethral sphincter. Therefore, as the pressure of the abdominal organs on the bladder increases, the internal bladder pressure increases and becomes more than the urethral closure pressure, rendering the urethral sphincter weak and resulting in urinary incontinence [1, 7, 12]. In summary, multiple factors are associated with causing pelvic floor muscle weakness and stress incontinence in pregnancy; however the exact mechanism remains unclear.

Multiple risk factors have been identified to cause UI in pregnancy. The most relevant factors include maternal age, parity, obesity, smoking and individual predisposition i.e. genetic differences in connective tissue [2, 12]. Other risk factors include pre pregnancy urinary incontinence, gestational diabetes mellitus and constipation [9]. Maternal age found in close association with UI, however no specific cause identified, one of the multiple reasons could be latent manifestation of denervation during parturition [4, 11]. Obesity has a strong effect on UI as Prepregnancy and postnatal weight loss have shown to decrease the symptoms of UI drastically. Therefore, maintaining normal BMI is important for prevention [4, 12]. Parity directly associated with progression of UI; risk increased significantly after vaginal delivery compared to nulliparous [4]. The reason is due to neuromuscular damage caused by vaginal delivery leading to UI and PFM defects [5]. Hypothetically Forceps, vacuum delivery and episiotomy have been associated with UI but literature shows inconsistent relationship. Episiotomy doesn't have direct association to UI, still evidence doesn't encourage giving it routinely [1, 13]. Mode of delivery was causing another dilemma, some observational studies suggested that caesarean section has lower rate of PFM disorders including UI. A Swedish study also reported likewise data with significantly increased stress incontinence in women delivered only vaginal delivery compared to women with only caesarean section delivery [14]. However, United States National Institute of Health in 2006 concluded that the existing data does not adequately answer the question of whether elective caesarean section can reduce the risk of PFM disorders and that the other harms of caesarean delivery need to be weighed against this benefit [11]. Therefore, it is not recommended as a prophylactic measure.

Psychosocial effects of UI show in negligence of women to report their urine leakage due to embarrassment especially endemic in the Middle Eastern population as the women would rather suffer in silence rather than talk about their symptoms. Their conscious about their appearance, odour and this effects their self-esteem and social interactions. They face difficulties with physical activity and travel. They can even isolate themselves to the point of being at home the entire time and this can lead to depression [2, 4, 12]. Prophylaxis and management of PFM weakness first introduced by Dr Arnold Kegel in the 1950s who described a method to reduce the risk of urinary incontinence and post-partum urinary loss. The method was implemented where women were taught how to contract their levator ani and periurethral muscles, hence strengthening the pelvic floor. We now commonly refer to these as the "Kegel" exercise [5, 11, 12]. Several studies have found that PFME's done

during pregnancy have been found to decrease the risk of UI in pregnancy and for a short- term post-partum [4].

MATERIAL AND METHODS

This is a prospective cross-sectional study conducted between September 2018 to December 2018, among 105 pregnant women attending routine antenatal care clinic (ANC) at Al Ain Hospital, Al Ain, and United Arab Emirates. Al Ain Hospital is fully accredited hospital by Joint Commission International (JCIA). It serves as a teaching and referral medical institute having close collaboration with the College of Medicine and Health Sciences at United Arab Emirates University (UAEU).

The women were interviwed using the International Consultation on Urinary Incontinence (ICIQ – UI Short form) in English and Arabic Versions. These are internationally recognized questionnaires obtained from the University of Bristol, United Kingdom. This form serves as an efficient tool in evaluating the frequency, severity and impact on quality of life (QoL) of urinary incontinence. It is easy to understand questionnaire available in various languages as per patient population. We used this short and simple questionnaire to screen for incontinence in the pregnant women attending the outpatient clinics and obtained a comprehensive summary of their symptoms. Also, literature review of similar studies was carried out to prepare a checklist of variables. Descriptive statistics showing in [Table.1] including details from patient history such as age, parity, gravid status, and other associated risk factors to urinary incontinence were identified. This information was obtained retrospectively from patient records. The inclusion criteria for this study were pregnant women in the first, second or third trimesters. While the exclusion criteria by default was non- pregnant patients. The women were classified into the three trimesters based on the weeks of gestation on presentation to the clinic. Pregnancy up to 12 weeks was considered as first trimester, from 13th to the 26th week of pregnancy as second trimester and 27th week onwards till the end of pregnancy as third trimester. Consent was obtained from each woman after explanation of the research in written form and the confidentiality of the participants was maintained. The ethical approval was obtained from Human Research Ethics Committee at the college of medicine and health sciences at UAEU. All the data collected was coded and entered into Microsoft Excel Program under password protection. Microsoft analysis was performed using the Statistical Package for the Social Sciences, Inc. (SPSS), Version 22, (IBM, and Chicago, Illinois, USA).

Table-1: Statistical analysis of Urinary Incontinence in Study Population and Risk Factors

Patient characteristic	Number (%)	Incontinence		P -Value
Age		**UI** 51(48.6 %)	**NoUI** 54(51.4%)	
Younger or equal to 35	76(72.4%)	32 (42.10%)	44 (57.89%)	0.027
Older than 35	29(27.6%)	19 (65.51%)	10 (34.48%)	
Race National	61(58.1%)	30 (49.18%)	31 (50.82%)	0.520
Non-National	44(41.9%)	21 (47.73%)	23 (52.27%)	
Body Mass Index (BMI)				
Normal (18.5-24.9)	19(18.1%)	8 (42.10%)	11 (57.89%)	.522
Overweight (25.0- 29.9)	40(38.1%)	17 (42.5%)	23 (57.5%)	
Obese (>30.0)	44(41.9%)	24 (54.55%)	20 (45.45%)	
Parity				
Primipara (P=1)	34 (32.4%)	12 (35.29%)	22 (64.71%)	0.046
Low parity (P= 2-4)	53 (50.5%)	28 (52.83%)	25 (47.17%)	
High parity (P>=5)	18 (17.1%)	11 (61.11%)	7 (38.89%)	
Gravidity				0.469
Primigravida (G=1)	16 (15.2%)	6 (37.50%)	10 (62.50%)	
Multigravida (G=2-4)	51 (48.6%)	24(47.06%)	27 (52.94%)	
Grandmultigravida (G>=5)	38 (36.2%)	21 (55.26%)	17 (44.74%)	
Trimester				
1st Trimester	14 (13.3%)	7 (50.00%)	7 (50.00%)	0.495
2nd Trimester	24 (22.9%)	9 (37.50%)	15 (62.50%)	
3rd Trimester	64 (61.0%)	33(51.56%)	31 (48.44%)	
Gestational Diabetes				
No	66 (32.9%)	30 (45.45%)	36 (54.55%)	0.256
Yes	39 (37.1%)	21(53.85%)	18 (46.15%)	
Hypertension				
No	96 (91.4%)	46 (47.92%)	50 (52.08%)	0.463
Yes	9 (8.6%)	5 (55.56%)	4 (44.44%)	
Urinary Tract Infection				
No	94 (89.5%)	44 (46.81%)	48 (51.06%)	0.459
Yes	11 (10.5%)	6 (54.55%)	5 (45.45%)	
Constipation				
No	92 (87.6%)	43 (46.74%)	47 (51.09%)	0.455
Yes	13 (12.4%)	7 (53.85%)	6 (46.15%)	
Total Patients n=105				

RESULTS

Of total 105 pregnant women, 49% (n=51) complained of Urinary Incontinence during pregnancy [Figure.1]. Among those women who have reported UI, Stress incontinence was the most common type accounting for 52%, while Urge incontinence was the second most common accounting for 42%. Among the 51 patients who reported urinary incontinence, 50% (n=25) reported leaking no more than once a week. However, 15.69% (n=8) had leaking 2 to 3 times a week, and 22.22% (n = 18) had leaking once to several times a day. Regarding the quantity of urine leaked, 74.51% (n=38/51) reported leak in small amounts and 23.53% (n=12/51) had leakage in moderate amounts.

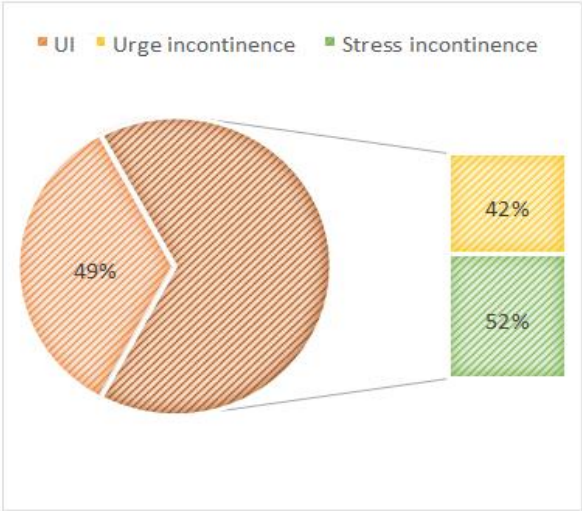

Fig-1: Urine Incontience Rate among Pregnant Women

The majority (60.4%) of the incontinent women reported that incontinence had no or minimum effect on their quality of life. All participants were between 19 to 45 years of age, 72.4 % being less than 35 years and 27.6 % being more than 35 years. On correlating Age with the presence of Urinary incontinence, it was found that there was a significant difference in urinary incontinence between those women less than 35 years versus older than 35 years. The incidence of incontinence increased with advanced age where 65% of the older age group (> 35 years) complained of UI compared to 42% of the younger age group (≤35 years) (P = 0.027).

Majority of the participants (41.9%) were obese (BMI more than 30) and 38.1% were overweight (BMI more than 25). Body Mass Index (BMI) was classified using WHO classification 2018 as normal weight up to 24.9, overweight up to 29.9 and >30 as obese. Urinary incontinence was reported more with increased BMI (P =0.522) described in [Figure.2].

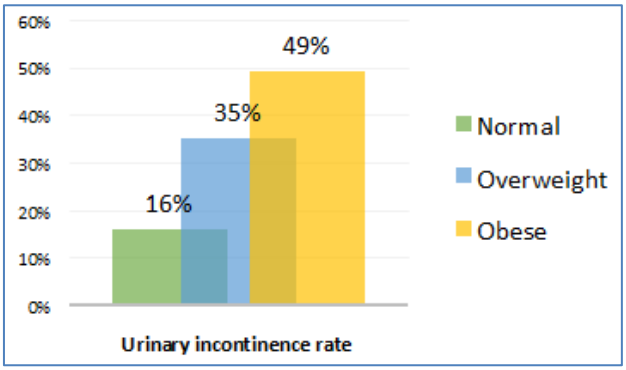

Fig-2: Graphical demonstration of the relation between increasing BMI and urinary incontinence

On further analysis, 48.6 % of the participant was found to be multigravida, 36.2% were grand multigravida and 15% were primigravida. Urinary incontinence was more experienced in multiparous women compared to primiparous (p=0.034). In addition, women with multiple vaginal deliveries had more UI compared to C-sections (P = 0.012). Increasing frequency was demonstrated in all types of urinary incontinence during the course of pregnancy. In our study, 13.73% women experienced UI in the first trimester, 17.65% in the second trimester and 64.71% women reported UI in third trimester. A large number of the participants had gestational diabetes mellitus (GDM) 37.1%. On correlation of GDM and the

presence of Urinary incontinence, there was no significant difference between GDM and Non GDM patients. 11 % of the participant experienced urinary tract infections, while 92% didn't experienced UTI. Majority of participant had experienced no constipation 90%, while few of them were complaining of constipation 13%. There was no significant correlation between the presence of UI and other factors such as UTIs and Constipation.

DISCUSSION

The prevalence rate of Urinary Incontience in our study is 49%.These findings are consistent with other studies, namely one reported study among pregnant women conducted in Turkey, that revealed a prevalence of (42.4%) [15]. around half of expectant mothers (50%) reported leaking no more than once a week; in 76% of them the volume was small in amount. The majority (60.4%) of the incontinent women reported that incontinence had no or minimum effect on their quality of life. When we compared our study to other studies the most evaluated risk factors have been age, parity and obesity. How these factors (and others) performed in the current study is discussed below; in the present study, all participants were between 19 to 45 years of age, 72.4 % being less than 35 years and 27.6 % being more than 35 years. In current study we have found that the incidence of incontinence increased with advanced age where 65% of the older age group (> 35 years) complained of UI compared to 42% of the younger age group (≤35 years) (P = 0.027). Multiple studies are in concurrence with the statistics that the occurrence of UI increases with age [3, 4, 16]. Hence supporting our study. Another finding in the current study was that majority of the participants (41.9%) were obese (BMI more than 30) and 38.1% were overweight (BMI more than 25). We found that obesity or increased BMI is a predisposing factor in the onset of UI and this was consistent with various other studies [3, 17, 18]. However, some studies revealed that BMI favoured the presence of UI but was insignificant factor as mentioned by Seshan & Muliira (2013) and Vahdatpouretal (2015) [18, 13, 19]. This was contrary to several investigations in which BMI was reported to be one of the major factors in determining UI, because increased abdominal weight led to continuous strain over pelvic tissues, causing pelvic muscles to be persistently stretched and muscles and nerves to weaken over time [19-22]. In our study parity was a significant predictor of onset for UI.

Urinary incontinence was more experienced in multiparous women compared to primiparous; this was supported [16, 17, 22]. As the United Arab Emirates has a variety of nationalities, we have classified our patient into national and non-national categories. 58.1 % were a UAE national and 41.9% were nonnational. There was no significant correlation between the presence of UI and other factors such as Gestational Diabetes Mellitus (GDM), Hypertension and Constipation. A large number of the participants had GDM 37.1% and some had experienced constipation 13%. In current study we have also evaluated patient for Urinary tract infection and we have found that 11 % of the participant were experienced UTI, while 92% didn't experienced UTI. Lastly, a major prognostic factor for UI in our pregnancy was that as the gestational age progresses the UI had increased. UI increased with each trimester and was prevalent the most in the third trimester. This was in concurrence in with reports in other studies [1, 23, 24, 25].

CONCLUSION

In conclusion, UI during pregnancy is a warrants significant public health consideration. It is essential to pay more attention to diagnose UI in pregnancy and understand its effect on women's health. Although many studies on UI have been performed on women, few have focused on UI in pregnant women. This study is the first to analyse the prevalence of UI amongst the pregnant patients presenting to Al Ain Hospital, United Arab Emirates. A significant proportion of pregnant women experienced urinary incontinence which was not reported to their primary care providers. The predictors reported in this study can be used to enhance identification of symptoms, diagnosis, referral to specialized clinics and reassurance of patients. Therefore, more health education and awareness must be enforced to ensure early detection and management.

RECOMMENDATIONS

Implement educational programs and antenatal discussions to increase awareness about UI, especially to reduce the stigma regarding this issue and encourage women to report symptoms. Issue booklets/leaflets to educate patients about the risk factors of UI and preventive methods such as pelvic floor exercises. Offer referral to gyn urology speciality clinics. Conduct studies on a larger scale with better resources to determine the prevalence of UI treatment.

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