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Research Article

ASSOCIATION BETWEEN OBESITY AND PREVALENCE OF URINARY INCONTINENCE AMONG WOMEN ATTENDING POSTNATAL CLINICS IN PRIMARY HEALTH CARE IN QATAR

Dr Mathew D*, Mohammed R and Dr Alam MT

[1]Consultant Family Medicine, Primary Health Care Corporation, Qatar Department of Family Medicine, Weill Cornell Medical College, Qatar
[2]Senior Physiotherapist, Primary Health Care Corporation, Qatar
[3]Consultant Family Medicine, Primary Health Care Corporation, Qatar

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A B S T R A C T

Objective: Urinary Incontinence (UI) is more prevalent among women and is a significant health concern. Almost half the elderly population suffer from the condition. Obesity, aging and parity are some of the main factors associated with UI apart from other serious health issues such as diabetes mellitus and neurological disorders. In this study we aim to estimate the prevalence of urinary incontinence (UI) and its association with obesity among women attending the postnatal clinics in Qatar.

Method: Three hundred and fifty-seven women volunteers from 3 post-natal clinics who participated in the study and the International Consultation Incontinence Questionnaire – Short Form (ICIQ-SF) was used for estimating the prevalence. The risk of UI with reference to BMI was calculated using the multiple regression method.

Results: The results indicated that stress and mixed type of UI was more prevalent. The tendency to seek medical help for UI was relatively higher among the obese population compared to that of healthy and overweight population. The results indicated that the odds of developing any incontinence was increased by 181% and 121% in the overweight and obese categories, taking the normal weight group as reference. Similarly, the odds of developing any incontinence was reduced by 55 % and 65 % in the normal weight group women, compared to that of obese and overweight category respectively.

Conclusion: The results clearly indicate that a significantly higher odds of developing UI were observed in higher BMI groups, confirming that a higher BMI is a potential risk factor for UI.

INTRODUCTION

Urinary Incontinence (UI) is more common in women and affects up to 50% of women of middle and older ages. According to the International Continence Society (ICS) and the International Urogynecological Association (IUGA), UI is defined as 'the Complaint of involuntary loss of urine.' UI may be classified as stress UI (SUI), urgency UI (UUI), mixed UI (MUI), postural UI, nocturnal enuresis, insensible UI and coital UI. Of these, SUI, UUI, and MUI are most common. (Abrams *et al*., 2002; Haylen *et al*., 2010) Occurrence of UI may be associated with several factors such as poor education, physical exertion, changes in body position, pregnancy, postpartum, urgency, obesity indicated by higher BMI, increased waist-hip ratio, visceral obesity, and diseased conditions such as recurrent urinary tract infection and diabetes mellitus.

Corresponding author:* **Dr Mathew D
Consultant Family Medicine, Primary Health Care Corporation, Qatar
Department of Family Medicine, Weill Cornell Medical College, Qatar

The overall prevalence range of UI among the women in the Middle East region is between 20.3% and 54.8%(El-Azab *et al*., 2007). In Qatar, the prevalence of UI is 20.7% (Ghafouri *et al*., 2014). However, the effect of obesity on UI among Qatari women is not known. A descriptive cross-sectional study aiming to establish a cause-effect relationship between obesity and UI might be useful to determine the risk factors related to UI among women with higher body mass index (BMI) in Qatar. Such region specific analysis will be useful in devising more appropriate health care aids in Qatar.

Literature Review

Obesity and UI

Relating to obesity, an increased visceral adiposity results in increased intra-abdominal pressure (IAP) that leads to elevated bladder pressure, urethral mobility and eventually UI. It is also postulated that IAP causes a strain on the pelvic floor muscles resulting in low pelvic floor strength (Bray & Digesu, 2015). While the UI during pregnancy is due to the increased pressure exerted on the bladder by the growing fetus, low pelvic floor

muscle strength accounts to UI post-partum (Mørkved & Bø, 1999). Based on the Nurses' Health Study, one of the largest cohort conducted till date, waist circumference had a major impact on stress UI due to IAP. Further, among older women, a higher BMI was a risk factor for mixed and urge UI (Townsend *et al*., 2008). As per the study on prevalence of urinary incontinence among women and analysis of potential risk factors in Germany and Denmark, the highest prevalence of UI was observed in women with BMI ≥35.(Schreiber Pedersen *et al*., 2017) Evidences also suggest that weight loss strategies reduced the incontinence to certain extent. (Hunskaar, 2008)From the above reports, a clear association between obesity and UI is established. However, it is still unclear whether UI might lead to obesity, if incontinent women avoid physical activities in order to manage the symptoms. Similarly, cross-sectional studies reflecting the effects of weight gain post-partum on UI are also not available. Such prospective studies are essential to understand the cause-effect relationship of factors such as obesity and post-partum on UI onset, in order to channelize appropriate healthcare needs.

UI due to Metabolic Syndrome

Apart from these mechanical effects, obesity is also related to metabolic syndrome (MetS). MetS collectively denotes various metabolic disorders such as increased BMI, increased waist circumference (WC), hypertension, dyslipidemia, hyperglycemia, and hypertriglyceridemia. MetS is strongly related to overactive bladder (OAB) and lower urinary tract symptoms (LUTS) in women, resulting in UI.(He *et al*., 2016) Various other studies also suggest strong linkages between obesity based MetS associated with pelvic ischemia and OAB. A pro-inflammation state leading to premature vascular disease ischemia and pelvic atherosclerosis resulting in primary bladder dysfunction can also cause UI (Gallagher *et al*., 2011).

Pelvic Floor Strength and UI

Pelvic floor muscles support the lower abdominal organs such as the uterus, bladder, small intestine and rectum. Factors such as pregnancy and childbirth, aging, chronic cough or chronic constipation, obesity and surgeries may lead to weakening of the pelvic floor muscles due to strain. Weak pelvic floor muscles are also a risk factor for UI. Owing to decreased number of consecutive childbirths and fitness awareness, educated and knowledgeable women sought after Kegel exercises during and after pregnancy, in order to strengthen the pelvic floor (Marques *et al*., 2010)(Park & Kang, 2014). These exercises are effective in managing SUI, however proper professional guidance is required initially to perfect the technique in the correct way to avoid unwanted complications (Mayo Clinic Staff, 2019).

In 2016, a study on the prevalence of UI among women in Qatar, revealed that about 21% had UI. Based on the results, SUI was the predominant type of UI. Women with SUI aged between 39 and 69 years, the prevalence was age dependent, i.e. older the women, higher the prevalence. Incidence of UI before 40 years is attributed to social factors such as early marriage and multiparity. Poor knowledge on prenatal and postnatal pelvic floor muscle exercises such as Kegel exercises also accounts for such high prevalence of UI among young women. This study also indicated that lack/low level of education was a major risk factor for prevalence UI. With better education came a better lifestyle and personal hygiene that led to seeking timely medical help (Ghafouri *et al*., 2014). However, in this study pregnant and women in post-partum period up to 12 weeks were excluded.

Post-partum obesity and its health impacts

Weight gain during and after pregnancy is a common phenomenon. Even women who had a normal BMI during pregnancy tend to retain their weight post-partum. Weight retention even after a year post pregnancy significantly contributes to obesity among women (Endres *et al*., 2015). Obesity is associated with severe health issues such as cardiovascular diseases, hypertension, diabetes, cancer, and depression (Aziz & Sohail, 2016).Moreover, UI is a complex symptom related to the above-mentioned health issues as well as obesity. Both obesity and UI are common and costly disorders among most women, affecting their health-related quality of life. Since the UI due to obesity can be modified by exercises and diet, it is essential to conduct awareness programmes to emphasize on the causes, risk factors and prevention of UI. Hence it is critical to analyze the region-wise prevalence of obesity and UI among women, and provide necessary medical help.

The effect of UI on QoL of Middle-East Women

UI takes a major toll on the quality of life (QoL) of the incontinent women due to social, economic and religious reasons (Saleh *et al*., 2005). While most of the incontinent women often fail to engage themselves in leisurely activities, few of them even report impairment of their work. More particularly in case of Muslim women, UI renders difficulty in performing their prayer rituals (Salat) which involves physical movements, mental concentration and cleanliness (Altaweel & Alharbi, 2012).

Awareness on UI

UI in women often goes unreported and undiagnosed, as most women consider the condition a part of their normal life and manage the symptoms in silence, without seeking medical assistance. Furthermore, an embarrassment to discuss the condition, particularly to a male physician also leads to underreports. This trend increases post-partum that might lead to weight gain and health complications. For instance, in a case study conducted in Saudi, 77% of women with UI did not approach healthcare needs. While 18.5% of them sought medical help, 32.5 % of women discussed the symptoms with their peers and family (Al-Badr *et al*., 2012). This situation needs to be addressed by proper propaganda emphasizing on the need to consult and seek medical help for UI, because UI might be a mere symptom of a more life-threatening conditions. Furthermore, direct and indirect costs associated with UI is also on the higher end. Absorbent pads, Kegel exercises, weight loss programmes are some of the non-surgical methods to treat UI post-partum. Physicians and medical professionals operating at basal levels such as primary health care centers play an important role in educating the public on the importance of reporting UI. Such awareness programmes can also be done through educational institutes and media (social, digital and visual) for greater reach.

Importance of appropriate study design

Inclusion and exclusion criteria play a major role in determining the results of the CS studies. For instance, mixed reviews exist on the relation between the mode of delivery (vaginal, caesarean section, lacerations or device assisted) and UI. However, UI is more predominant in women with 5 or more number of childbirths and forceps-assisted vaginal delivery. The previous study on UI in Qatar reported bronchial asthma to be a major risk factor for UI. Therefore, presence of other clinical manifestations such as diabetes mellitus, bronchial asthma, chronic cough, history of gynecologic surgeries, chronic constipation, CVD and so on needs to be considered and a suitable bias needs to be established. The results of the study will give an insight on the prevalence of UI among obese women after delivery. The data can be used to device appropriate health care needs such as awareness campaigns, weight loss programs, surgical measures and professional fitness and diet coaches.

Study Objective

In this study we aim to estimate the prevalence of UI among women attending the postnatal clinics in primary health care in Qatar. This descriptive study will be useful to establish an association between obesity and prevalence of UI post-partum and the results can be used to devise appropriate health care programmes for women attending post-natal clinics in Qatar.

RESEARCH METHODOLOGY

A descriptive, cross-sectional study was conducted on females attending their 6-week post-natal check-up routine upon consent. This study was carried out in Gharraffat Al Raayan Health Center, Airport Health Centre, Rawdat Al Khail Health Centre, between March 2018 and Feb 2019 A total of 357 women participated in the study. The International Consultation on Incontinence Questionnaire-Short Form (ICIQ-SF) was used as the main tool of evaluation. The questionnaire comprised of 4 questions in total, of which 3 were scored and one was not scored.

The following table describes the type of questions and related scores.

Q. No	Description of Question	Score Range
1	Frequency of UI	0–5
2	Usual amount of UI	0–6
3	Interference with everyday life	0-10
4	Self-diagnostic item	Not scored

In order to understand the relation between obesity and UI, total body mass index (BMI) was used as the dependent variable. The participants were grouped into obese (BMI >= 30), overweight (BMI 25-30) and normal (BMI <25) category based on their BMI. Of the 357 participants, 93 were of normal weight, 149 women were overweight and 115 were obese. Under each category, the participants were screened for their age, parity, and ethnicity. The type of UI was considered as an independent variable and the findings were adjusted based on their age, parity, and ethnicity.

Statistical Analysis

The results were expressed as odds ratio (OR) with 95% confidence intervals (CI). Data under each category were presented as both number and percentage distributions. Evaluations of the results were performed using multiple logistic regression.

The prevalence of UI in the current study was categorized based on the BMI. Among the patients with normal weight (BMI <25), 45% were less than 29 years of age and 63% of them had 1-2 childbirths. Whereas in the obese category, 45% were more than 34 years of age and 18.3% of them had 5 or more childbirths (Table 1). Factors such as age and parity affected the BMI of the patients.

Among the normal weight women, 28% had SUI, 21.5% had UUI and 35.5% had MUI. For the overweight category, 31.5% had SUI, 16.1% had UUI and 26.1% had MUI, whereas among the obese women 36.5% had SUI, 38.9% had UUI and 44.3% had MUI. None except 1 of the 357 reported total incontinence. Based on the results it is evident that prevalence of UI is increased in the higher BMI category. No significant difference in the overall prevalence of UI before, during and after pregnancy was reported (Table 2).

Although almost half of the women visiting the post-natal clinics had urine leakage problems, most of them did not seek medical assistance. Only 58.7% of women in normal weight and 55.1% overweight women went for medical help whereas 73.7% of obese women sought medical assistance for UI (Table 2). As per the literature studies, some of the reasons for under-reporting of UI is attributed to hope for the betterment of symptoms, adapting to self-management, embarrassment and reluctance to talk to male physicians, acceptance of the problem as a natural consequence of childbirth and aging (Kinchen *et al*., 2003; Contreras Ortiz, 2004). In addition, the severity assessed by the frequency and amount of urine leakage also affects the rate of women seeking medical care. More severe the condition, an increased tendency to seek medical help is observed. In the present study, the frequency and the amount of leakage increased with increasing BMI (Table 2). In other words, high severity of the condition prevailed among the obese patients and hence the higher reporting of the case. In the present study, it was determined that 30.5 % of the women had mild urinary incontinence, 8.1 % moderate urinary incontinence, and 1.4 % severe urinary incontinence. In relation, the interference of UI with the quality of life of the patients was also low. About 63% of the participants report no interference and 22% reported low or negligible interference in their social life, which also might be a reason for underreporting. It is important to raise proper awareness regarding UI and its health implications and even patients with low severity of the condition must be encouraged to seek medical assistance to treat UI.

With BMI >=30 as reference, the odds of developing any incontinence was reduced by 55% and the odds of developing frequent UI was increased by 89% in women with BMI <25. For the overweight group, the odds of developing any UI and frequent UI was increased by 25% and 143% respectively. With BMI 25-30 as reference, the odds of developing any incontinence was reduced by 65% in women with BMI <25. For the obese group, the odds of developing any UI was reduced by 22%. With BMI <=25 as reference, the odds of developing any incontinence and frequent UI was increased by 181% and 28% respectively in overweight women. For the obese group the odds of developing any UI was increased by 121% and the odds of developing frequent UI was reduced by

47% (Table 3). Previous epidemiological reports evidence that a higher BMI increases the risk for developing UI. A direct relation was established between higher BMI and UI in studies conducted in the US and UK (Burgio *et al*., 1991; Dwyer *et al*., 1988). Similarly, in this study, it was observed that a higher BMI is indeed a potential risk factor for developing any type of incontinence.

When adjusted for age, parity and ethnicity, no significant effect was observed for age and parity in all cases. However, a higher risk was observed relative to ethnicity in some cases (Table 3). The reason for this could be the lifestyle of people from different cultures. This again insists the necessity to collect region-wise data on UI for appropriate health care models. Stress and mixed UI were the most predominant type of UI among women in the present study. The results were comparable with previous reports which indicate SUI and MUI being most common type of UI in women (El-Azab *et al*., 2007; Rizk *et al*., 2001; Altaweel & Alharbi, 2012; Al-Badr *et al*., 2012) .

Table 4 considers the association of BMI and frequent UI risk adjusted to age, parity and ethnicity. Based on the observations and multiple logistics regression method, considering the normal weight group as reference, a significant high odd of developing UUI was observed. When adjusted with age, ethnicity and parity, the odds of developing UUI was higher with parity. In contrast, considering the overweight group as reference, the normal weight group had 66% reduced risk for UUI and no significant effect was observed with respect to age, parity and ethnicity. In addition, the odds of developing SUI and MUI were not significant. The data is in accordance with previous study conducted in Qatar in which UUI was the most common type of UI observed in women less than 40 years of age. The condition was attributed to early marriage, multiparity and low education level (Ghafouri *et al*., 2014). UUI is associated with several health conditions such as diabetes mellitus, stroke, Parkinson's disease, multiple sclerosis. In addition, an overactive bladder or detrusor instability can also cause UUI. The results of this study suggest the importance of considering other health concerns of the study participants. Such potential effect modifiers need to be addressed appropriately to avoid bias in order to pinpoint the root cause of UI.

The reason for parity being a risk factor for UI might be due to the fact a significant strength lowering effect of pelvic floor muscles that occurs during pregnancy. More common variables of parity such as number of childbirths, mode of delivery (vaginal, Caesarean, assisted vaginal), miscarriages, place of delivery, interval period between childbirth, postpartum care and so on are shown to have significant effects on UI. Evidences also show that other factors like menopause, maternal age and post-partum conditions such as genital prolapse, muscle atrophy to be positive risk factors for UI. A more detailed analysis of such variables will serve to understand the effect of parity on UI more clearly (Kılıç, 2016; Parazzini *et al*., 2003).

Ethical Considerations

Prior to the commencement of the study, ethical approval was obtained from the local ethics committee and the study was performed according to the Declaration of Helsinki (IRB No. CMUH-34/21.12.2015). Informed written consent was obtained from all participants.

Table 1 Comparison of BMI and Demographic characteristics of the study groups (357 patients)

Characteristics	Variables	BMI <25 (Normal) n=93	BMI 25-30 (Overweight) n=149	BMI >=30 (Obese) n=115	P value
Age (years)		30.33±5.30	30.73±4.83	32.69±4.74	**0.001****
	<=29	42 (45.2)	64 (43.0)	34 (29.6)	
	30-33	28 (30.1)	40 (26.8)	31 (27.0)	**0.033***
	≥34	23 (24.7)	45 (30.2)	50 (43.5)	
Nationality	Qatari	15 (16.1)	22 (14.8)	13 (11.3)	0.572
	Non-Qatari	78 (83.9)	127 (85.2)	102 (88.7)	
Parity (N)	0 (None)	1 (1.1)	1 (0.7)	0 (0.0)	
	1-2 births	59 (63.4)	82 (55.0)	53 (46.1)	**0.052***
	3-4 births	25 (26.9)	54 (36.2)	41 (35.7)	
	>=5 births	8 (8.6)	12 (8.1)	21 (18.3)	

**P<0.01, *P<0.05

Table 2 Comparison of BMI and clinical characteristics of the study groups (357 patients)

Characteristics	Variables	BMI <25 (Normal) n=93	BMI 25-30 (Overweight) n=149	BMI >=30 (Obese) n=115	P value
Complain of urine leak before pregnancy or during pregnancy					0.221
	No	61 (65.6)	102 (68.5)	67 (58.3)	
	Yes	32 (34.4)	47 (31.5)	48 (41.7)	
Frequency					
	Never	60 (64.5)	93 (62.4)	64 (56.1)	
	1/week or less	16 (17.2)	25 (16.8)	12 (10.5)	
	2-3/week	6 (6.5)	17 (11.4)	18 (15.8)	0.173
	Several times a day	6 (6.5)	17 (11.4)	18 (15.8)	
	All the time	5 (5.4)	3 (2.0)	7 (6.1)	
Amount of leakage					
	None	58 (62.4)	88 (59.9)	65 (57.0)	
	Small amount	22 (23.7)	49 (33.3)	38 (33.3)	0.380
	Moderate amount	12 (12.9)	8 (5.4)	9 (7.9)	
	Large amount	1 (1.1)	2 (1.4)	2 (1.8)	
Urine interference					
	0	60 (66.7)	97 (65.5)	68 (59.1)	
	1-3	17 (18.9)	37 (25.0)	26 (22.6)	0.454
	4-6	8 (8.9)	9 (6.1)	15 (13.0)	
	7-10	5 (5.6)	5 (3.4)	6 (5.2)	
Type of UI					
Stress	Yes	26 (28.0)	47 (31.5)	42 (36.5)	0.411
	No	67 (72.0)	102 (68.5)	73 (63.5	
Urge	Yes	20 (21.5)	24 (16.1)	30 (26.1)	0.137
	No	73 (78.5)	125 (83.9)	85 (73.9)	
Mixed	Yes	33 (35.5)	58 (38.9)	51 (44.3)	0.414
	No	60 (64.5)	91 (61.1)	64 (55.7)	
Total Incontinence	Yes	0 (0.0)	1 (0.7)	0 (0.0)	0.497
	No	93 (100.0)	148 (99.3)	115 (100.0)	
Treatment seeking behaviour: Seeking medical assistance					**0.007****
	Yes	54 (58.7)	81 (55.1)	84 (73.7)	
	No	38 (41.3)	66 (44.9)	30 (26.3)	

€Stress type= Cough or sneeze, physically active; Urge type*=Before you get to toilet; finished urinating and dressed; no obvious reason, asleep; total incontinenceβ = leaks all the time, **p<0.01

Table 3 Association between BMI and Incident urinary incontinence using multiple logistic regression

	Any Incontinence		Frequent Incontinence		Severe Incontinence	
	Cases (n)	OR (95% CI)	Cases (n)	OR (95% CI)	Cases (n)	OR (95% CI)
Body mass Index (kg/m^2)* >=30 (Reference=1)						
<25 (Normal)	6	0.452 (0.128-1.604)	16	1.895 (0.631-5.694)	11	-
agen		0.779 (0.427-1.419)				

parityn		0.591 (0.303-1.153)				
ethinicityn		3.570 (0.921-13.832)				
25-30 (Over Weight)	17	1.273 (0.468-3.464)	25	2.437 (0.897-6.622)	14	-
agen		0.883 (0.528-1.475)				
parityn		0.608 (0.346-1.069)				
ethinicityn		1.049 (0.270-4.084)				
25-30 (Reference=1)						
<25 (Normal)	6	0.355 (0.098-1.284)	16		11	-
agen		0.882 (0.503-1.546)				
parityn		0.972 (0.515-1.836)				
ethinicityn		3.403 (0.932-12.427)				
>=30 (Obese)	18	0.786 (0.289-2.139)	12	0.410 (0.151-1.115)	20	
agen		1.133 (0.678-1.893)				
parityn		1.645 (0.935-2.893)				
ethinicityn		0.953 (0.245-3.710)				
<25 (Reference=1)						
25-30 (Over weight)	17	2.813 (0.779-10.166)	25	1.286 (0.454-3.644)	12	-
agen		1.134 (0.647-1.988)				
parityn		1.029 (0.545-1.943)				
ethinicityn		0.294 (0.080-1.073)				
>=30 (Obese)	18	2.211 (0.623-7.841)	12	0.528 (0.176-1.585)	20	
agen		1.284 (0.705-2.341)				
parityn		1.692 (0.867-3.301)				
ethinicityn		0.280 (0.072-1.085)				

Dependent variable: BMI, $ Adjusted by age, parity and ethnicity

Table 4 Association between BMI and according to incontinence type using multiple logistic regression

	Stress		Urge		Mixed		Total Incontinence	
	Cases (n)	OR (95% CI)	Cases (n)	OR (95% CI)	Cases (n)	OR (95% CI)	Cases (n)	OR (95% CI)
Body mass Index (kg/m^2)*								
<25 (Reference=1)								
25-30 (Overweight)	26	1.681 (0.487-5.803)	47	2.952* (1.062-8.203)	33	0.329 (0.078-1.394)	0	-
agen		1.027 (0.730-1.444)						
parityn		1.301 (0.846-2.003)						
ethinicityn		0.876 (0.419-1.830)						
>=30 (Obese)	47	0.904 (0.261-3.136)	24	1.283 (0.462-3.560)	58	0.698 (0.158-3.079)	1	1.638 (1.638-1.638)
agen		1.362 (0.947-1.957)						
parityn		1.645* (1.052-2.572)						
ethinicityn		0.586 (0.254-1.351)						
25-30 (Reference=1)								
<25 (Normal)	26	0.595 (0.172-2.054)	20	0.339* (0.122-0.941)	33	3.036 (0.718-12.843)		-
agen		0.974 (0.692-1.371)						
parityn		0.768 (0.499-1.183)						
ethinicityn		1.141 (0.547-2.384)						
>=30 (Obese)	42	0.538 (0.171-1.693)	30	0.435 (0.175-1.078)	51	2.119 (0.565-7.948)	-	-
agen		1.326 (0.963-1.827)						
parityn		1.264 (0.862-1.854)						
ethinicityn		0.668 (0.311-1.437)						
<25 (Reference=1)								
25-30 (Overweight)	47	1.681 (0.487-5.803)	24	2.952* (1.062-8.203)	58	0.329 (0.078-1.394)	1	-
agen		1.027 (0.730-1.444)						
parityn		1.301 (0.846-2.003)						
ethinicityn		0.876 (0.419-1.830)						
>=30 (Obese)	42	0.904 (0.261-3.136)	30	1.283 (0.462-3.560)	51	0.698 (0.158-3.079)	0	1.638 (1.638-1.638)
agen		1.362 (0.947-1.957)						
parityn		1.645* (1.052-2.572)						
ethinicityn		0.586 (0.254-1.351)						

Dependent variable: BMI, $ Adjusted by age, parity and ethnicity, **p<0.05*

DISCUSSION

Medically and socially, UI is a serious public health concern owing to its impact on quality of life and rising medical costs to the healthcare systems. Overall Prevalence of UI in Qatar was reported to be 20.7% (Ghafouri *et al*., 2014) whereas the prevalence of UI among Qatari women aged 45 years and above was 20.6 % in 2003 (Saleh *et al*., 2005) The participants in both studies were categorized based on their age and focused on understanding the impact of UI on their QoL. The present study, however focuses on the relation between obesity and prevalence of urinary incontinence among women attending postnatal clinics in primary health care centers in Qatar. The aim of the study is to identify the extent of risk of UI among normal weight, overweight and obese women with BMI as dependent variable. Previous reports on UI among women in Qatar did not consider obesity as a dependent factor. Hence the difference in the results of this study might be due to the variations in the inclusion and exclusion criteria, diagnostic and data collection strategies.

CONCLUSION

UI is not a disease, rather it is a symptom associated with more or less serious health concerns that might be life threatening if left untreated. A considerable number of females face socio-physical and psychological problems due to the condition as it largely affects their quality of life. UI is treatable when addressed with proper medical aid. However, negligence and low reporting of the condition is still a concern and requires to be addressed for effective treatment of the condition. Our study is more of a basic model, considering BMI as dependent variable with minimal adjustable variables (age, parity and ethnicity). The results indicate higher BMI to be a positive risk factor of UI. A follow-up study of detailed analyses inclusive of more variants is required to gain proper insight into the issue. On the other hand, awareness of the condition and encouraging more women to report the condition to healthcare professionals will prevent delays in the treatment of the condition. Simultaneously, the necessity of discussing the issue to their patients must be advocated among healthcare professionals in PHCC and they must be appropriately trained to address the issue. Apart from control and preventive measures, regular follow-up studies from the clinical side will be of great help in avoiding major health complications, thus improving the health-related quality of life among incontinent women.

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