

Epidemiology of urinary incontinence in Jordanian women

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ABSTRACT

Objectives: To find out prevalence rate of urine incontinence (UI) in a representative sample of women aged 50-65 years in south Jordan. The study will also investigate the relationship between UI (stress and urge) and the following variables: age of the woman and her parity, diabetes mellitus, urinary tract infection (UTI), body mass index (BMI), medications (diuretics), menopause, past history of hysterectomy, and poor mobility.

Methods: For achieving the objectives of this study, a sample of women (n=182) in the age group 50 - 65 years in south Jordan (Karak, Taffileh, Aqaba) was selected using a multistage sampling procedure to represent women in this age group in south Jordan. A questionnaire and face-to-face interviews were used as the instrument for data collection. The questionnaire was tested in a pilot study before starting data collection from the field. Data was collected from the field in July 2003. Data was analyzed using Statistical Package for Social Science (SPSS). Chi Square Test and Fisher's Exact Probability Test were used to identify the significance of associations between UI and characteristics of the respondents.

Results: Approximately one third of respondents had urinary incontinence: 23.1% had stress UI, 26.4% had urge UI, and 18.1% had the mixed type. Prevalence rate of UI was 56.3% for women suffering from UTI and 50% for those who use diuretics. Approximately 54% of

women who need help to go around inside the house were complaining of UI. High prevalence rates were also observed if parity was 5 - 6 (43.5%), women at menopause (39.7%), obese women (39.3%), and in diabetic women (35%). High prevalence rates of stress incontinence were found in women suffering from UTI (37.5%), in women using diuretics (39.5%), if parity was 5 - 6 (34.8%), and in women with past history of hysterectomy (28.6%). Stress UI was increasing with the increase in the BMI. The associations between urge incontinence, BMI, UTI, use of diuretics, and the ability to go around inside the house were all significant at the 0.05 level.

Conclusions: Prevalence rate of UI varied from one country to another and from one study to another study. Possible reasons for such inconsistency were discussed. Appropriate treatment of UI should be based on valid diagnosis of cases, type of UI, and the identification of contributing factors. Lines of treatment and interventions for UI were discussed. Further studies of this condition are needed in Jordan for both males and females and in all age groups. Such studies should emphasize the size of the problem, etiology and risk factors, and the cost of the problem for both the incontinent person and for the health care system.

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Urinary incontinence (UI) is characterized by involuntary loss of urine from bladder. It can happen to any person at any age, but more common in women than men and in elderly people. Causes of UI are multifactorial and such factors may work from within or outside the lower urinary tract.

Most cases of urinary incontinence fall under one of the following types of incontinence: stress, urge, mixed, overflow, and functional incontinence.¹ Stress incontinence is the involuntary leakage of urine on exertion as in coughing, sneezing, laughing, bending over, or with exercise as in

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jumping. Urge incontinence is the inability to postpone urination with strong urge to void, and may lead to involuntary leakage of urine. Mixed incontinence is the combination of stress and urge incontinence. Overflow incontinence is urine loss associated with over distension of the bladder, typically caused by an underactive bladder (detrusor) muscle or outlet obstruction. Women with urinary incontinence caused by chronic impairment of physical or cognitive function, or both, are said to have functional incontinence. These patients have overactive bladder relative to the ability or speed with which they can get to the toilet.

The International Consultation on UI and the WHO recognized that UI is a problem on a global scale.² As life expectancy increases, number of elderly will increase, and subsequently the size of the problem will increase. In United States of America (USA) it is expected that UI will remain a significant medical, economic, and social problem where it is expected that one third of its population will belong to the age of 65 years or more by the year 2050.³ A study published in 1997 in USA⁴ showed that the annual cost of UI has been estimated to be 16 billion dollars.

Urinary incontinence patients are often embarrassed by their condition. Such feeling may limit their participation in activities of everyday living⁵ and may lead to emotional distress and isolation. Three quarters of elderly outpatients who subjected to treatment for UI were either embarrassed or unconvinced by their condition and 37% felt that their daily life and activities were impaired.⁶ Lam et al⁷ indicated that one fifth of incontinent women in their study do not attend social activities as a consequence of their UI. Urinary incontinence in elderly people has only recently becoming an important health problem in terms of its emotional, social, medical and economic impact. The belief of many people that UI is an aging problem that needs no medical intervention and the increase in life expectancy in many countries will without any doubt increase the size of the problem. In Jordan this problem has not been investigated in elderly women in the age group 50 - 65 years. In this study an attempt was made to: 1.) Find out the prevalence rate of UI in a representative sample of women aged 50 - 65 years in south Jordan. The study will also find prevalence rate of 3 types of UI; stress, urge, and mixed UI. 2.) To find out the relationship between UI (stress and urge) and the following variables: age of the woman and her parity, diabetes mellitus, urinary tract infection (UTI), body mass index (BMI), medications (diuretics), menopause, past history of hysterectomy, and poor mobility.

The study is expected to have some policy implications that might be useful for future planning of services for this growing sector of the population

Table 1 - Prevalence rate of urinary incontinence.

Incontinence type	Frequency	(%)
<i>Urinary incontinence (**)</i>		
Incontinent	57	(31.3)
Continent	125	(68.7)
Total	182	(100)
<i>Stress incontinence</i>		
Yes	42	(23.1)
No	140	(76.9)
Total	182	(100)
<i>Urge incontinence</i>		
Yes	48	(26.4)
No	134	(73.6)
Total	182	(100)
<i>Mixed Incontinence</i>		
Yes	33	(18.1)
No	149	(79.1)
Total	182	(100)

in Jordan. Recent estimates⁸ showed that 4.5% of Jordan population is 60 years or more and 9.1% of the population aged 50 years or more.

Methods. This study is the second phase of a project assessing women's needs in south Jordan. The first phase covered Ma'an governorate and the second phase covered the other 3 governorates (Karak, Taffileh, and Aqaba). The target area of this study (phase 2) forms 13.5% of the total area of the country and its total population constitutes approximately 8% of the total population of the country.⁸ The target area constitutes of 228 blocks where each block has a number of households. Blocks were distributed to 3 governorates in the south (Karak, Taffileh, and Aqaba).

For achieving the objectives of this survey, 68 blocks were selected from the 3 governorates in a way to represent all blocks in each of the governorates (urban and rural). Twelve housing units were selected from each block by using a systematic random selection procedure, giving a total of 810 households for the 3 governorates. All females in the age group 9 - 65 years in the households were considered as our target population (1706), where 182 of them were in the age group 50 - 65 years and were considered in this study of UI as our target population.

The questionnaire was tested in a pilot study before starting data collection from the field. Data was collected from the field in July 2003. Microsoft Access screens were used for data entry. Data entry screens were designed with an ability of range and logical checking. Frequent checks were made throughout the process of data entry. Data was analyzed using Statistical package for Social Sciences (SPSS). All missing values were excluded

from data analysis. Data was analyzed by using SPSS version 9. Chi square test and Fisher's Exact Probability Tests[®] were used to identify the significance of associations between UI and selected characteristics of the respondents. If the *p* value of the test is ≤ 0.05 , the association was considered significant at the 0.05 level.

Results. The response rate for households was 95% and it was 96% for individual interviews. The study shows that three quarters of women had at least 7 pregnancies (mean parity is 8) and 17% still having their period. Mean age of women was 56 years and mean age at menopause was 49.6 years. About 79% were overweight or obese, 22% had diabetes mellitus, and 17.7% complained of UTI. 8.4% of women indicated that they had a history of hysterectomy and 6.1% indicated that they need help to be able to go around in their houses. **Table 1** indicates that approximately one third of

respondents had urinary incontinence; 23.1% had stress UI, 26.4% had urge UI, and 18.1% had the mixed type. **Table 2** shows the relationship between UI and selected characteristics of the woman. Significant associations ($p < 0.05$) were observed regarding UTI and use of diuretics. Prevalence rate of UI was 56.3% for women suffering from UTI and 50% for those who use diuretics. An estimated 54% of women who need help to go around inside the house were complaining if UI. High prevalence rates were observed if parity is 5 - 6 (43.5%), women at menopause (39.7%), obese women (39.3%), and in diabetic women (35%).

Table 3 shows the percentage distribution (prevalence) of stress and urge incontinence according to selected characteristics of respondents. The association between stress incontinence and selected characteristics of the respondents was significant ($p < 0.05$) for UTI and the use of diuretics, where women suffering from UTI, 37.5% were more likely to have this problem and 39.3% for

Table 2 - Prevalence rate of incontinence (stress or urge or mixed) according to selected characteristics of women

Characteristics	Incontinent n (%)	Continent n (%)	Total n (%)
Age of the woman ($p=0.61$)**			
50-54 yrs	20 (28.6)	50 (71.4)	70 (100)
55-59 yrs	16 (37.2)	27 (62.8)	43 (100)
60-65 yrs	20 (29.9)	47 (79.1)	67 (100)
Parity ($p=0.35$)			
Nullipara	1 (14.3)	6 (85.7)	7 (100)
1-4	3 (21.4)	11 (78.6)	14 (100)
5-6	10 (43.5)	13 (56.5)	23 (100)
7+	43 (31.4)	94 (68.6)	123 (100)
Menopausal status ($p=0.29$)			
Not menopause	11 (36.7)	19 (63.3)	30 (100)
Menopause	44 (39.7)	104 (70.3)	148 (100)
Body mass index (BMI) ($p=0.127$)			
Normal (BMI = 18.5-24)	8 (22.9)	27 (77.1)	35 (100)
Overweight (BMI = 25-29)	15 (26.8)	41 (73.2)	56 (100)
Obese (BMI ≥ 30)	33 (39.3)	51 (60.7)	84 (100)
Diabetes mellitus ($p=0.36$)			
Yes	14 (35)	26 (65.0)	40 (100)
No	43 (30.5)	98 (69.5)	141 (100)
Urinary tract infections ($p=0.001$)			
Yes	18 (56.3)	14 (43.8)	32 (100)
No	39 (26.2)	110 (73.8)	149 (100)
Diuretics use ($p=0.04$)			
Yes	14 (50)	14 (50.0)	28 (100)
No	43 (30.3)	99 (69.7)	142 (100)
Past history of hysterectomy ($p=0.44$)			
Yes	4 (28.6)	10 (71.4)	14 (100)
No	53 (34.9)	99 (65.1)	152 (100)
Ability to go around inside the house ($p=0.09$)			
Help is not needed	51 (30)	119 (70.0)	170 (100)
Help is needed	6 (54.5)	5 (45.5)	11 (100)

Table 3 - Prevalence rate of stress incontinence and urge incontinence according to selected characteristics of women

Characteristics	Stress urinary infection		Urge urinary infection	
	n	(%)	n	(%)
Age of the woman				
50-54 yrs (n=70)	18	(25.7)	14	(20)
55-59 yrs (n=43)	11	(25.6)	14	(32.6)
60-65 yrs (n=67)	13	(19.4)	19	(28.4)
<i>p</i> value	0.63		0.29	
Parity				
Nullipara (n=7)	0	(0.0)	1	(14.3)
1-4(n=14)	2	(14.3)	2	(14.3)
5-6(n=23)	8	(34.8)	7	(30.4)
7+(n=137)	32	(23.4)	14	(27.7)
<i>p</i> value	0.11		0.55	0.55
Menopausal status				
No menopause (n=30)	10	(33.3)	8	(26.7)
Menopause (n=148)	31	(20.9)	38	(25.7)
<i>p</i> value	0.11		0.54	
Body mass index				
Normal (n=35)	6	(17.1)	8	(22.9)
Overweight (n=56)	12	(21.4)	10	(17.9)
Obese (n=84)	23	(27.4)	30	(35.7)
<i>p</i> value	0.43		0.05	
Diabetes mellitus				
Yes (n=40)	10	(25)	13	(32.5)
No (n= 141)	32	(22.7)	35	(24.8)
<i>p</i> value	0.46		0.22	
Urinary tract infections				
Yes (n=32)	12	(37.5)	16	(50)
No (n= 149)	30	(20.1)	32	(21.5)
<i>p</i> value	0.03		0.001	
Diuretics intake				
Yes (n=28)	11	(39.3)	14	(50)
No (n= 142)	31	(21.8)	34	(23.9)
<i>p</i> value	0.047		0.006	
Past history of hysterectomy				
Yes (n= 14)	4	(28.6)	3	(21.4)
No (n=152)	38	(25)	45	(29.6)
<i>p</i> value	0.49		0.38	
Ability to go around the house				
Help is not needed (n=170)	40	(23.5)	42	(24.7)
Ability to go inside the house				
Help is not needed (n=11)	2	(18.2)	6	(54.5)
<i>p</i> value	0.51		0.04	

women using diuretics. High prevalence rates of stress incontinence were observed in women aged 55 - 59 years (25.6%), parity 5 - 6 (34.8%), and in women with past history of hysterectomy (28.6%). Body mass index did not show a significant relationship with stress incontinence ($p>0.05$) although UI was increasing with the increase in the BMI. Table 3 shows significant associations ($p<0.05$) between urge incontinence and BMI, UTI, use of diuretics, and the ability to go around inside the house. Prevalence rate of urge incontinence was: 50% in women who suffered from UTI and in women who use diuretics, 54.5% in women who stated that they need help to go around inside the house, and 35.7% in obese women. Prevalence rate of urge incontinence was also high in women who aged 55 - 59 years (32.6%). Diabetic women (32.5%), and in women still having the period (31.6%), but associations were not significant at the 0.05 level ($p>0.05$).

DISCUSSION. Urinary incontinence seems to be one of the growing public health problems in terms of its medical, social, and cost to both the incontinent person or his family, and to the health care system. This study is believed to be the first in Jordan and in the region in terms of its objectives, the target population, and settings. The general aim of the study was to explore the problem of UI in women aged 50 - 65 years. Results of such a study might be useful to those interested in health problems of the elderly, a sector of the population, which has been, to some extent, neglected for many decades in most of the developing countries including Jordan.

Different international studies had been conducted to elaborate this problem. Prevalence rate of UI varied from one study to another. Prevalence of UI is 37% in the USA, 26% in continental Europe, and 29% in the United Kingdom.¹⁰ Combining series from Singapore, Pakistan, Tunisia, New Zealand, and Japan yields a mean prevalence of incontinence of 20%, according to the literature.¹⁰ Our study in south Jordan indicated a prevalence rate of 31.3% among women aged 50 - 65 years.

Different authors have reported the prevalence of stress, urge, and mixed incontinence. Prevalence of stress incontinence ranges between 29% (women aged more than 60 years) to 75% (women aged 45 years); urge incontinence ranges between 9% (age more than 18 years) and 27% (age more than 20 years), while the prevalence of mixed incontinence ranges between 14% (age 45 years) and 61% (age more than 60 years).¹¹⁻¹⁵ Our study showed that the prevalence rate of UI was 23.1% for stress UI, 26.4% for urge UI, and 18.1% for the mixed type.

Prevalence of UI according to age of the woman showed inconsistent results. The rate was 7.7% in

females who aged more than 60 years,¹¹ 6.7% in those who aged 50 - 65 years,¹⁶ 10.4% in women aged 30 - 59 years, and 22% in women aged 45 years.¹² Kok et al¹⁷ reported an overall prevalence of 23.5% in elderly women, of whom 14% reported that their UI is a daily event. A study of women in the age of 20 to 80 years¹⁵ reported an overall prevalence of 53.2% and the prevalence was 47% in younger women (between 20 - 49 years of age). In another study¹⁸ involving 2,763 postmenopausal women (mean age: 67 years), 56% of women reported urinary incontinence. Prevalence of urinary incontinence increased from 27% in the age group 65 - 69 years to more than 50% by the ninth decade of life.¹⁹ Our study showed that the prevalence of UI was highest in the age group 55 - 59 years (37.2%) and was lowest in the age group 50 - 54 years (28.6%). It is worth mentioning that this group of women aged 55-59 years when compared to other groups in the study was more likely to suffer from diabetes mellitus and overweight/obesity, factors which were positively associated with UI.

Many people suffer from UI in silence. Urinary incontinence seems to be under diagnosed and underreported as many patients do not report the condition to their physician for 2 reasons, the first is their fear of embarrassment and the second is attributable to their belief that UI is a normal consequence of aging that cannot be treated.²⁰ Under reporting of the condition, inconsistent definitions of UI, differences in questionnaires, setting of the study, and methodology, as well as the reliability of self-report data and characteristics of the populations, which had been investigated for UI, may partially explain the substantial variation in the size of the problem in international studies.

There are several risk factors that could explain why certain groups of women are at higher risk of developing UI. Aging process may contribute to UI along with other factors such as illness, use of medications, decrease in CNS functions, and decrease in bladder capacity.²¹ The effect of postmenopausal estrogen deficiency on incontinence is debatable. Milsom et al²² found that there was no difference in prevalence of incontinence with respect to menopausal state. A study carried out on 1820 women showed that UI is more likely to occur around menopause and in old age.²³ Prevalence of UI in our study is higher at menopause but menopausal state did not show significant relationship with UI in our study. It is worth mentioning that inconsistent results were seen regarding the effect of menopausal hormonal replacement therapy on UI.²⁴

Childbearing may lead to UI in women due to stretching and bruising of nerves during delivery and subsequently the pelvic floor muscles may become weak and may lead to stress incontinence. Nevertheless, conflicting results have been shown

regarding the relationship between childbirth and UI, where one of the studies showed a significant relationship²⁵ while another study showed no significant relationship between UI and childbearing.²⁶ A survey from Sweden revealed an increased incidence of incontinence in women from 5.5% in nulliparas to 10.6% in women with 1 delivery and 16.4% in women with more than 3 deliveries.²² Our study showed no specific trend, where UI ranges between 14.3% in nulliparas to about 43.5% if parity is 5 - 6 and then decreased to about 31.4% if parity is 7 or more. The prevalence of both stress and urge incontinence were lowest in nulliparas and highest if parity is 5 - 6.

Increased BMI and having diabetes mellitus have been studied as a risk factors for developing UI. Burgio et al²⁶ found a direct correlation between increased BMI and presence of UI. Body mass did not differ with regard to whether stress or urge incontinence was found.²⁶ One study, evaluating the effect of surgically induced weight loss in obese females, found that UI resolved in 9 out of 12 after weight loss.²⁷ Diabetes mellitus is associated with both stress and urge incontinence.^{28,29} Control of blood sugar and weight of the woman are useful procedures to reduce symptoms of UI.²¹ These findings are in general agreement with our findings regarding the relationship between UI and both obesity and diabetes mellitus.

Hysterectomy, UTI, use of diuretics, and lack of mobility were investigated in relation to UI. Hysterectomy is often cited as a risk factor for urinary incontinence although the relationship is debatable. Milsom et al²² indicated that the prevalence of UI in women with history of hysterectomy was 20.8% compared to 16.4% for women without history of hysterectomy. In contrast, other studies³⁰ have failed to show that hysterectomy predisposes to UI in healthy middle-aged women. The lack of association of hysterectomy and incontinence was also found in a Danish study of women aged 45 years.¹² Prior history of infections related to the female pelvis has been evaluated as to its influence on incontinence. Yarnell et al³⁰ found a strong association between previous attacks of cystitis and urinary incontinence. Lack of mobility and getting old increase the risk of stool impaction which is responsible for about 10% of cases of UI in old patients.³¹ These findings were in general agreement with our findings in south Jordan.

Appropriate treatment of UI should be based on valid diagnosis of cases, type of UI, and the identification of contributing factors. Treatment and interventions for UI include medications, mechanical devices, surgery, and behavioral modification.³² Estrogen replacement therapy may also be useful for UI and has been used in women that have estrogen deficiencies to reduce frequency of urge UI and in combination with adrenergic

agonists to treat stress UI.^{33,34} Other lines of treatment include weight reduction in obese women, selected exercises to strengthen pelvic floor muscles, bladder training to normalize micturition intervals, electrical stimulation of pelvic floor in stress incontinence and of the bladder in urge incontinence. In severe cases, surgery might be indicated. In all cases of UI, a specialist should diagnose and decide the line(s) of management of the case.

Studies of UI in elderly people are difficult, especially if we use questionnaires, due to their impaired memories; and due to coincidental health problems that makes it difficult to diagnose the reason of the problem. Nevertheless, epidemiological studies in this field should continue to enrich our understanding of the etiology and risk factors of UI. Further studies of this condition are needed in Jordan for both males and females and in all age groups. Such studies should emphasize the size of the problem, etiology and risk factors, and the cost of the problem for both the incontinent person and for the health care system.

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