Relationship between urinary tract infection and urinary incontinence. A study in Iraq

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1. abstract :

Background:

Urinary tract infection (UTI) is the most common urological disorder among women, which leads to the development of urinary incontinence through several mechanisms.

Objectives:

To calculate the relationship between an incident, symptomatic urinary tract infection (UTI), and self-reported urine loss. using a Cross-sectional study design in Iraqi women adults.

Methods

As part of a research study, 82 individuals were asked after asking a team of experts to review questionnaires as a method of identifying question problems, breakdowns in the question-answering process, and other potential measurement errors in survey reports. Open and closed questions were used.

Results

The differences among percentages of anthropometric, clinical, and physical features of participants were signi7icant ($p<0.05$)

Conclusion

The results were significant and met our null hypothesis which there is a correlation between the two diseases.

Keywords

Urinary incontinence, urinary tract infection, menopause, uterine prolapse

2. Introduction

There are several theories regarding the pathophysiology of urinary tract infections that cause urinary incontinence one of them is UTI causing the bladder to become swollen and irritated

2.1. Definition of UTI

Urinary tract infection is the inflammatory response of the urothelium to bacterial invasion including upper or lower or both the urine tract.

2.1.1. Classification:

-Upper urinary tract Infections (above the level of the bladder) Pyelonephritis. [1]

-Lower urinary tract infections (below the level of the bladder) Cystitis and Urethritis

- Uncomplicated UTI is one occurring in a healthy adult woman over 12 and non-pregnant with a structurally and functionally normal urinary tract.

-Complicated UTI in females with comorbid medical conditions and all males.
-Isolated UTI has an interval of at least 6 months between infections.
-Recurrent UTI is >2 infections in 6 months, or 3 within 12 months.
-unresolved infection is the failure of the initial treatment course to eradicate bacteria from the urine. [1]

2.1.2. risk factors

distributed through this disease include:
UTI is more common in post-menopausal females due to residual urine after voiding, which is often associated with bladder or uterine prolapse. [2]

It’s good to know that kidney stones and recurrent urinary tract infections are frequently concomitant conditions like Struvite (magnesium ammonium phosphate, MAP) stones. They are often found incidentally in examinations for abdominal or back pain, recurrent UTI, or hematuria, and they frequently form large, branched stones known as staghorn calculi. [3]

A study shows About one-third of women suffered from UTI very often or often after sexual intercourse and more than half of the patients stated that sexual relations were negatively influenced by UTI. [4]

Urinary tract infection (UTI) is one of the more common perinatal complications, affecting approximately 8% of pregnancies. These infections represent a spectrum, from asymptomatic bacteriuria to symptomatic acute cystitis, to the most serious, pyelonephritis.[5]

Patients with type 2 diabetes mellitus are more likely to experience urinary tract infections, which also have worse consequences. Moreover, resistant microorganisms are more frequently the source of them. These individuals may be more susceptible to urinary tract infections due to a variety of immune system deficiencies, poor metabolic regulation, and inadequate bladder emptying brought on by autonomic neuropathy. [6]

Women make up a significant proportion of UTI sufferers with an annual incidence of 12.1%. The peak incidence of UTI in women occurs between the ages of 20 to 24 years. [7]
30–50% of women who have a UTI will experience a recurrence within 6–12 months [8] [9]

2.2. urinary incontinence

2.2.1. Definition

Urinary incontinence is defined as involuntary loss of urine which is objectively demonstrable and socially embarrassing In most casesit , is due to hyper-mobility, where the pelvic floor and ligaments cannot retain the urethra in position during increases in abdominal pressure, leading to leakage of urine. [10] [11]

2.2.2. risk factors :

The primary symptom of genitourinary syndrome of menopause (GSM) is urine incontinence, which is frequently linked to sexual dysfunction. More than half of menopausal women experience menopausal urinary tract symptoms. [12] [13]

Increased body weight causes more pressure on the bladder. Therefore weight loss improves urinary incontinence in overweight and obese women. Based on a study examined the longer-term effects of a weight loss intervention on urinary incontinence. Obesity is a potent, independent risk factor for both incident and prevalent UI, according to epidemiological research. Weight has a definite dose-response effect on UI; for every 5 units rise in BMI, the risk of UI increases by 20% to 70%. [14] [15]

Women who have undergone cesarean sections are more likely to experience urine incontinence than women who are nulliparous, and this risk increases even further for women who have given birth vaginally. [16]

Chronic cough can develop increased intraperitonial pressure, hence, increasing the risk of incontinence. Urinary incontinence affects over half of female patients with chronic cough. Patients with interstitial lung disease frequently experience cough-related urine incontinence, which is generally disregarded. [17] [18] [19]

Mechanical trauma can cause stress and urge urinary incontinence may develop after pelvic trauma, especially after pelvic bone fractures [20]

2.2.3. Epidemiology

The prevalence increases with age, with approximately 5% of women between 15 and 44 years of age being affected, rising to 10% of those aged between 45 and 64 years, and approximately 20% of those older than 65 years. [21] [22]

2.2.4. Types of urinary incontinence in females

Stress urinary incontinence
Urge incontinence
Mixed incontinence
Bypass incontinence from fistula
Functional incontinence, especially in the elderly
Stress urinary incontinence (SUI) – according to some authors, it is the most common type of UI and represents 50% to 88% of all types of urinary incontinence. [23] [24]

2.3. AIM:

Due to the gap in such research in Iraq, we chose this study on the Iraqi population of different ages in women to determine the prevalence.

We aimed to understand the correlation between urinary tract infection and urinary incontinence of both types stressful and neurological, and how the two factors may affect each other. In addition, to evaluate infection characteristics, incidence, and risk factors associated with UTI.

Such understanding may help physicians to understand their patients more. Therefore maximizing the effectiveness of the treatment. For example, Establishing a diagnosis of symptomatic UTI in older women requires careful clinical evaluation with possible laboratory assessment using urinalysis and urine culture. Asymptomatic bacteriuria should be differentiated from symptomatic UTI. Asymptomatic bacteriuria in older women should not be treated.

3. METHODOLOGY:

It is a Cross-sectional study that targets a Sample of 82 participants with criteria including all ages, only female gender, living in Iraq.

3.1. Questionnaire

The survey was obtained online where a question about continuing with the survey if any of the signs or symptoms of UTI or/and urinary incontinence were noticed, age, weight, and marital status were also required. Menopause and if any chronic diseases were presented.

The participant completed parts of an Arabic translation of the URINARY INCONTINENCE QUESTIONNAIRE of OFS Healthcare six out of eight have three response levels: not at all (level 0); never and always (level 2). Two out of eight were yes (level 1) with items that give a score of urinary incontinence between 0-16

UTI-SIQ-8 item for UTI prevalence five out of eight have three response levels: (level 0); never and always (level 2). Three out of eight were yes (level 2) or no questions (level 1). with items that give a score of urinary tract infection between 0-21

Excel and SPSS were used to analyze data.

4. results

4.1. Results of anthropometric features

the current study showed that most women were married (60.0%) with age group (43.8%) and under menopause (88.8%). The weight of most women was (70.24±11.48). The differences among percentages of anthropometric features of participants were signi7icant (p<0.05) (table 1).

Table 1; Anthropometric features of participants

		Count	Percent	P value
Social status	Single	28	35.0%	P<0.001***
	Married	48	60.0%	
	Divorced	4	5.0%	
Age groups (years)	21-30	35	43.8%	P<0.001***
	31-40	23	28.8%	
	41-50	13	16.3%	
	51-60	8	10.0%	
	>60	1	1.3%	
Menopause	Yes	9	11.3%	P<0.001***
	No	71	88.8%	
Women weight	80	Mean	70.24	
		Std. Deviation	11.48	

4.2. Results of urinary incontinence

Results of conducted study showed the most women were without diabetes mellitus (80.0%), no prolapse (96.3%), no chronic respiratory diseases (88.8%), no coughing when urine loss (48.8%), no loss of urine when doing squat and when reaching to bathroom (80.0% and 57.5), no urgency (41.3), Can empty the bladder when urinating (48.8%), and no lose urine unintentionally (55.0%). The differences among percentages of clinical features of participants were signi7icant ($p<0.05$) (table 2).

Table 2; clinical features of participants of INCONTINENCE

		Count	Percent	P value
Diabetes mellitus	Yes	16	20.0%	P<0.001***
	No	64	80.0%	
Prolapse	Yes	3	3.8%	P<0.001***
	No	77	96.3%	
Chronic respiratory diseases	Yes	9	11.3%	P<0.001***
	No	71	88.8%	
Loss of urine when coughing	No	39	48.8%	P<0.001***
	Often	8	10.0%	
	Sometimes	33	41.3%	

Loss of urine when doing squat	No	64	80.0%	P<0.001***
	Often	1	1.3%	
	Sometimes	15	18.8%	
Loss of urine when reaching the bathroom	No	46	57.5%	P<0.01**
	Often	10	12.5%	
	Sometimes	24	30.0%	
Urgency	No	33	41.3%	P<0.05*
	Often	16	20.0%	
	Sometimes	31	38.8%	
Cannot empty the bladder when urinating	No	39	48.8%	P<0.05*
	Often	10	12.5%	
	Sometimes	31	38.8%	
Number of times to lose urine unintentionally	0	44	55.0%	P<0.001***
	1	18	22.5%	
	2	18	22.5%	

4.3. Results of UTI

conducted study showed that most women were without frequent kidney stones (92.5%), sometimes going to the bathroom (56.3%), rarely pain during urination and on the lower part of the abdomen (51.3% and 50.0%), rarely frequent back pain (46.3%), rarely orange or red color of urine (68.8%), and without vaginal discharge has yellowish to greenish color (70.0%). Additionally, 50.0% of women were with frequent urinary tract infections. The differences among percentages of physical and clinical features of participants were signi7icant ($p<0.05$) (table 3).

Table 3; physical and clinical features of participants of UTI

		Count	Percent	P value
Frequent kidney stones	Yes	6	7.5%	P<0.001***
	No	74	92.5%	
Frequent urinary tract infection	Yes	40	50.0%	1.00
	No	40	50.0%	
Number of times of going to bathroom	Rarely	24	30.0%	P<0.01**
	Often	11	13.8%	
	Sometimes	45	56.3%	
Pain during urination	Rarely	41	51.3%	P<0.001***
	Often	14	17.5%	
	Sometimes	25	31.3%	
Frequent pain on the lower part of abdomen	Rarely	40	50.0%	P<0.001***
	Often	8	10.0%	
	Sometimes	32	40.0%	
Frequent back pain	Rarely	37	46.3%	P<0.05*
	Often	19	23.8%	
	Sometimes	24	30.0%	
Orange or red color of urine	Rarely	55	68.8%	P<0.001***
	Often	6	7.5%	
	Sometimes	19	23.8%	
Vaginal discharge has yellowish to greenish color	Yes	24	30.0%	P<0.001***
	No	56	70.0%	

4.4. Statistical analysis

Data of the current study were analyzed by using the Chi-square (X^2) test to compare percentages. A level of signi7icance of $\alpha=0.05$ was applied to the test. (SPSS version 23) programs used to analyze current data.

5. Discussion

Our main research question was understanding the effects of urinary tract infection on urinary incontinence with participants living in Iraq.

The analysis and results generated support our research question in that there's a significant association between urinary tract infection and married women.

In our study, we target all age groups above 18 not like another study that targeted specific age groups. [22]

The results met our expectations and initial thoughts. We are looking for the correlation between urinary tract infection and urinary incontinence in both menopausal and non-menopausal females. Previous theories and studies about the same subject revealed similar results to a certain degree but in menopausal women.

On review of the signs and symptoms of UTI, the results were significant except for recurrent diagnosed UTI (p=1%)

On review of signs and symptoms of incontinence, the results were significant for all the questions that cover incontinence.

5.1. The implication:

The baseline rate of urine loss was higher in women with UTIs than in women without UTIs after removing episodes of incontinence associated with a UTI. Women with UTIs are characterized by urinary incontinence, both concurrently and during an acute episode. [23]

Our research can be beneficial to the literature in that it adds a new population to be studied, which is people living in Iraq, and where. We can use these results to conduct further research to be able to identify the specific factors that lead to our findings, whether there are practices or cultural aspects influencing the infection with incontinence.

Also, it can aid in the future management of these patients clinically and whether there are certain interventions that can be made to modify these factors.

5.2. Limitations:

Some limitations could have arisen when we were in the process of collecting the data some participants in our population may have started having some second thoughts about the research question and its purpose, so they did not fill out the research form.

The tool used for the diagnosis of urinary incontinence or urinary tract infection is unknown. We rely on the ideas that the participant has from different sources.

Also, we do not know the socioeconomic and educational status of our participants, and whether these factors have an influence on the frequency of urinary tract infections or practices that influence the infection, thus we cannot explain their effects on our results.

One of the cultural limitations is the sexual activity of the participants which has a major effect in the presence of UTI couldn’t be asked in the questionnaire

Other limitations may include our sample size, which is 82, and although the results may not be generalizable to the whole population, it give a general idea about the thoughts and the characteristics of the overall population.

Despite these potential limitations, It is beyond the scope of this study to find the influencing factors our main research question is answered and the results were as expected.