Risk factors related to Urinary Tract Infection among pregnant women attending Al- Sawira hospital in waist city

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Abstract

Objective: To identify risk factors related to UTI among pregnant women And find relationship between UTI and demographic and reproductive variables

Methods: A Case-Control study has been conducted from (1st November 2022 to 5th may 2023). A purposive sample of 200 pregnant women are selected from Sawira Hospital in Waist City,. Data was collected through interview of women   using a questionnaire format was designed and contained (3) part demographic variable, Reproductive variables, variables related to UTI .

Results :the present study revealed that the most age group ranged less than 25 years, some factors are showed significant such as age, short birth space, history of UTI and high parity and other not significant like source of water and history of abortion.

Conclusions:-The study shows that significant association with urinary tract infection are age, short birth space, previous attack of UTI, drying perin after urination, delay and decrease frequently of urination per day and increase sexual intercourse frequently and no urination after coitus and husband not wash genitals before coitus and factors which not have significant associated with UTI is source of water, educational level and history of abortion.

Key words: **urinary tract infection**, **pregnant women, risk factors, waist, city**

Introduction:

Urinary tract infection (UTI) has been defined as the most common bacterial infection of the mankind, for the purpose of helping in the alleviation of this issue, a study on UTI has been conducted earlier, addressing bacterial profiles and pattern of the antibiotic susceptibility of the UTIs, however, there has been a necessity for addressing the related factors of risk of the UTI that could have a significant impact on preventing and controlling this considerable health issue, affecting millions of the people every year and leading as well to the Gram-negative bacteremia [1-3]. The UTIs aren't only widespread, however, the clinical effect range ranges from the asymptomatic bacteriurea (ABU) to the acute pyelonephritis [4]. Females who have ABU throughout the pregnancy will more possibly give birth to low-birth-weight or premature babies and have 20-30-fold increase in the risks to develop pyelonephritis throughout the pregnancy in comparison to women who do not have the bacteriuria. The untreated ABU might as well result in developing cystitis in about 30% of the cases. Moreover, acute pyelonephritis was related to the anemia [5,6]. The ABU could as well be related to the increase in the neonatal mortality and a Gram negative septicemia source. Moreover, it has been related as well to the preeclampsia and chronic renal disease which was mentioned as one of the considerable negative obstetric outcomes and medical conditions [7,8].

Pregnancy has been defined as a factor that increases risks of the UTIs, in part, as a result of the gravid uterus pressure on ureters, which results in urine flow stasis and has been attributed as well to immunological and humeral changes throughout the normal pregnancy [9]. During the pregnancy there are several conditions that are related to the increase in the UTI prevalence [10]. UTI is widespread with varying prevalence by sexual activity, age, and presence of the genitourinary

anomalies [5]. In the healthy females, bacteriuria prevalence is increased with the age from approximately 1% in the females that are 5-14 years old to over 20% in the females who are 80 years old or more [5]. Prevalence has been found higher amongst the individuals in the lower socio-economic classes and the ones with a UTI history [11]. Sickle cell traits, grand multiparity, and diabetes mellitus were reported; every one of which has been related to 2-fold increase in bacteriuria rate [10]. There has been an increase as well in risks of developing the UTIs, as a result of the catheterization, kidney stones, use of spermicidal contraceptive, tumors and urethral strictures. Similarly increased UTI risks have been reported in presence of the acquired/congenital anomalies of bladder, neurological diseases, vesico-ureteric reflux and suppressed immune system [9, 12].

Additional predisposing factors include the pregnancy-specific bio-chemical changes in the urine, with higher glucose amounts, amino acids and hormone degradation products, increasing the level of the urinary pH [13].

Research objectives:

To identify risk factors related to UTI among pregnant women And find relationship between UTI and demographic and reproductive variables

Patients and Methods:

A case-control study has been carried out in (Sawira hospital in Waist City), which has been selected for the present study. A purposive sample of 200 pregnant women which included 100 pregnant women without UTI as control group and 100 pregnant women with UTIs as study group. This study was initiated from 1st November 2022 to 5th may 2023. The data has been gathered through interview of cases using questionnaire format consists of 3 part part 1 Demographic variable such as age in years, occupation status , Educational Level and part 2 factors related with factors related with UTI such as (family history, previous history, signs and symptoms, and source of drinking water) .

Part 3 Factors related reproductive variables such as (Gravidity, parity, number of abortion and type of previous mod of delivery, pregnancy trimester, pregnancy interval).

Ethical Consideration

Patient consent is one of the most important components of research. It is acquired once the researcher has completed the participant's consent form, explained the purpose of the study, and promised participant confidentiality.

Statistical analyses methods

Data has been analyzed with the use of the SPPS package v. 18. X^2 test has been utilized for significant P-value of <0.05 has been considered as significant. Odd ratio was 95% interval of confidence has been utilized for appreciating impacts of a variety of the variables on risk factor on UTI infection in pregnant women**.**

Results and Findings

This table shows group less than 25 years, and the higher percentage (36.0%) of control was in the age <25 years old. Such difference has been statistically significant (p-value)= 0.013.

the Sam table shows that a higher percentage of the cases in the level of the education at the College and above has been (38%) and higher control percentage in the college education has been (36%) and higher percentage of occupation of the sample in the study have been housewife (78%) in cases, and (65 %) in control, results are not significant as p-value has been higher than 0.05.

Table1. Distribution of study and control samples according to demographic variables

items	Group				Total		p-value
	Cases		Control				
	No	%	No	%	No	%	
< 25	50	50.0	36	36.0	86	43.0	0.013 S
25 – 29	26	26.0	33	33.0	59	29.5	
> = 30	24	24.0	31	31.0	55	27,5	
Total	100	100	100	100	200	100	
Mean Std. Deviation	26.39±263.6.						

Educational level	Groups				Total		p-value
	Cases		Control				
	No	%	No	%	No	%	
Illiterate	13	13	14	14	27	13.5	0.461 NS
Read and write	16	16	25	25	41	20.5	
Primary school	12	12	7	7	19	9.5	
Intermediate school	21	21	18	18	39	19.5	
College and above	38	38	36	36	74	37.0	
Total	100	100.0	100	100.0	200	100.0	
Occupation status							
House wife	78	78.0	65	65.0	134	71.5	0.034
Employed	15	15.0	25	25.0	40	20.0	
Not work	7	7.0	10	10.0	17	8.5	
Total	100	100.0	100	100.0	200	100.0	

Table 2 shows that The presence of a UTI infection amongst the pregnant women showed that the presence Pain when Urination about 86%, while the presence Blood in Urine and Pain in Bladder were 17% and %76 respectively.

Table 2 : Distributions of study sample of pregnant women infected with UTI according to signs & Symptoms with case and control study

items	Infected with UTI	
	No	%
Frequent of Urination		
Yes	94	94.0
No	6	6.0
Total	100	100.0

Pain When Urination		
Yes	86	86.0
No	14	14.0
Total	100	100.0
Blood in Urine		
Yes	17	17.0
No	83	83.0
Total	100	100.0
Pain in Bladder		
Yes	76	76.0
No	24	24.0
Total	100	100.0

Table 3 shows that higher percentage of Family History of UTI (47.0%) in cases, and (33.5%) in control and higher percentage of Previous History of UTI (62.0%) in cases, and (45.0 %) in control, results have been highly significant as p-value has been ≤0.000.

Table 3: Distribution of study and control according to factors related to UTI

items	Groups				Total		OR	95% CI	p-value
	Cases		Control						
	No	%	No	%	No	%			
Family History of UTI									
Yes	47	47.0	20	20.0	67	33.5	3.547	1.893-6.646	**0.000HS**
No	53	53.0	80	80.0	133	66.5	-	-	
Total	100	100.0	100	100.0	200	100.0	-	-	
Previous History of UTI									
Yes	62	62.0	28	28.0	90	45.0	4.195	2.315-7.604	**0.000HS**
No	38	38.0	72	72.0	110	55.0	-	-	
Total	100	100.0	100	100.0	200	100.0	-	-	

Table 4 shows that association of UTI and pregnancy trimester most pregnant with UTI infected were at Third trimester (41.0%) results have been highly significant as p-value has been ≤0.000. while child spacing Less than2years(41.0%) of them have UTI infection and significant association between them as p-value <0.05.while pregnant women with high multiparous (48%) of them have UTI infection and significant association between them as p-value <0.05.

Table 4: Distribution of reproductive history according to cases and control

Items-	Groups				Total		p-value
	Cases		Control				
	No	%	No	%	No	%	
Gestational Age							
First trimester	23	23.0	27	27.0	50	25.0	**0.047 S**
Second trimester	36	36.0	28	28.0	64	32.0	
Third trimester	41	41.0	45	45.0	86	43.0	
Total	100	100.0	100	100.0	200	100.0	
interval between pregnancies							
Less than 2years	40	41.0	48	48.0	89	44.5	**0.034**
More than 2 years	25	25.0	21	21.0	46	23.0	
prime	34	34.0	31	31.0	65	32.5	
Total	100	100.0	100	100.0	200	100	
Gravidity							
Prime gravidia	33	33.0	32	32.0	65	32.5	**0.412 NS**
2-3	53	53.0	47	47.0	100	50.0	
4-6	14	14.0	21	21.0	35	17.0	
Total	100	100.0	100	100.0	200	100.0	
Parity							
Nullpara	33	33.0	32	32.0	65	32.5	**0.012 S**
1-2	48	48.0	47	47.0	95	47.5	
>=3	19	19.0	21	21.0	40	20.0	
Total	100	100.0	100	100.0	200	100.0	
Number of abortion							
No	79	79.0	77	77.0	156	78.0	**0.769 NS**
1-2	18	18.0	18	18.0	36	18.0	
>=3	3	3.0	5	5.0	8	4.0	
Total	100	100.0	100	100.0	200	100.0	

This table showed that higher percentage (81.0%) of cases who were use Distilled water and there has not been any statistically significant correlation between them as p-value as p-value >0.05.

Table 5: Distribution of Source of drinking water according to cases and control

Source of drinking water	Groups				Total		P-value
	Cases		Control				
	No	%	No	%	No	%	
Distilled water	81	81.0	79	79.0	160	80.0	**0.591 NS**
Pipe water	19	19.0	20	20.0	39	19.5	
River	0	0.0	1	1.0	1	0.5	
Total	100	100.0	100	100.0	200	100.0	

This table shows the association of UTI and pregnancy Decrease daily fluid intake most pregnant with UTI infected were at Decrease daily fluid intake (72.0%), and pregnancy Decrease drinking of fresh juices most pregnant with UTI infected were at Decrease drinking of fresh juices(61.0%), shows that results have been highly significant as p-value has been ≤0.00

Table 6: Distribution of study and control according to Fluid intake and fresh juices

items	Groups				Total		OR	95%CI	P-value
	Cases		Control						
	No	%	No	%	No	%			
Decrease daily fluid intake									
Yes	72	72.0	38	38.0	110	55.0	4.195	2.315-7.604	**0.000 HS**
No	28	28.0	62	62.0	90	45.0	-	-	
Total	100	100.0	100	100.0	200	100.0	-	-	
Decrease drinking of fresh juices									
Yes	61	61.0	25	25.0	86	43.0	4.692	2.562-8.595	**0.000 HS**
No	93	39.0	75	75.0	114	57.0	-	-	
Total	100	100.0	100	100.0	200	100.0	-	-	

This table showed that higher percentage of women who Drying perineum after urination (47.0%) in cases, and (22.0%) in control and higher percentage of women who Increase duration of voiding delay (66.0%) in cases, and (16.0 %) in control, and higher percentage of Increase sexual intercourse frequently (49%) in cases, and (21.0 %) in the controls, This difference has been statistically significant as p-value was ≤0.000.

Table 7: Distributions of study samples and control   Drying perineum after urination, Increase duration of voiding-delay, Increase sexual intercourse frequently, and Constipation according to cases and control

Items	Groups				Total		OR	95%CI	P-value
	Cases		Control						
	No	%	No	%	No	%			
	Drying perineum after urination								
Yes	46	46.0	22	22.0	68	343.0	3.02	1.632-5.588	0.000HS
No	54	54.0	78	78.0	132	66.0	-	-	
Total	100	100.0	100	100.0	200	100.0	-	-	
	Decrease frequency of urination per day								
Yes	32	32.0	32	32.0	64	32.0	1.0	0.552-1.812	1.0 NS
No	68	68.0	68	68.0	136	68.0	-	-	
Total	100	100.0	100	100.0	200	100.0	-	-	
	Increase duration of voiding delay								
Yes	66	66.0	16	16.0	82	41.0	10.191	5.184-20.036	0.000HS
No	34	34.0	84	84.0	118	59.0	-	-	
Total	100	100.0	100	100.0	200	100.0	-	-	
	Increase sexual intercourse frequently								
1-2 weekly	49	49.0	21	21.0	70	35.0	3.614	1.943-6.724	0.000HS
≥3 weekly	51	51.0	79	79.0	130	65.0	-	-	
Total	100	100.0	100	100.0	200	100.0	-	-	

This table showed that higher percentage of women who No urination after coitus (42.0%) in cases, and (25.0%) in control and higher percentage of women who No urination before sleep (37.0%) in cases and (17.0 %) in control, higher percentage of women who Husband not wash genitals before coitus (42%) in the cases, and (17.0%) in the controls. Such difference has been–statistically

significant as p-value was ≤0.000.

Table 8: Distribution of pregnant women for habits for study and control

Items	Groups				Total		OR	95%CI	P-value
	Cases		Control						
	No	%	No	%	No	%			
	No urination after coitus								
Yes	42	42.0	25	25.0	67	33.5	2.172	1.19-3.967	**0.01 S**
No	48	48.0	75	75.0	133	66.5	-	-	
Total	100	100.0	100	100.0	200	100.0	-	-	
	No urination before sleep								
Yes	37	37.0	17	17.0	54	27.0	2.867	1.48-5.54	**0.000 HS**
No	63	63.0	83	83.0	146	73.0	-	-	
Total	100	100.0	100	100.0	200	100.0	-	-	
	Husband not wash genitals before coitus								
Yes	42	42.0	17	17.0	59	29.5	3.535	1.835-6.811	**0.000 HS**
No	58	58.0	83	83.0	141	70.5	-	-	
Total	100	100.0	100	100.0	200	100.0	-	-	

Discussion:

In this paper, the majority of the pregnant subjects in both study groups belonged to age group of less than 25 years age group and the mean is 26.39+6.263, The finding of this work has been in agreement with the previous studiesThey have identify that the pregnant females have been young, presenting an average and median age of 25 years [14] , [15], [16] and [17, 18]. And The study related that education status, and occupation had not been significantly related to developing of UTI, this result has been in disagreement to a study which could be a result of the difference between the two societies[19]. Concerning the UTI symptoms, this study had shown that the most frequent one of the symptoms is a higher urination frequency, this result confirms with these study [20].and [21].but this result disagreement with study, found that most frequent symptoms of the UTI amongst the infected women have been the dysuria and the increased in the micturition frequency, which is followed by the pain[22], which may be explained as urination frequency is one of the common symptoms that have been reported throughout the normal pregnancy as a result of the pregnancy changes besides the UTI pathology, had led to an increase in the complaints concerning it. This research had observed that pregnant women in third trimester had the highest of UTI followed by second trimester of pregnancy, this result confirms with study [23], reported that the UTI prevalence was associated with gestational age trimester, this might be due to UTI susceptibility throughout this period results from the ureteral dilation that had begun as early as 6 weeks, and reached its maximal value throughout

during 22-24 weeks [24]. In this paper, there has been significant correlation between the past history of UTI and the UTI throughout the pregnancy (OR=4.195),this study is in accordance with study [14],and [20], found that bacteruria prevalence has been amongst all of the women who had previous UTI history, this may be because that the history of previous UTI is one of the important risk factors for the asymptomatic UTIs. Short birth space interval was found to be a significant risk factor for developing UTI, similar finding were reported in study [20], found that there has been a considerable correlation between the child spacing duration and the UTI throughout the pregnancy of < 2years. Which could be a results of the profound physiological changes in the UTI pregnancy are more likely to happen in the women having pregnancies in close succession [25]. In addition to that, The result of this work represented that there was significant correlation between high parity with developing UTI, this result are similar to finding of a study [26], and [27], reported that the highest prevalence of UTI among the multigravida a.This could be explained as a result of pressure effect of a bigger uterus on the urethra and pressure on the bladder from the descending part leading to stasis of urine and the increased multi plication of urine[27]. Regarding decrease daily fluid intake and decrease drinking of fresh juice were higher among pregnant women with UTI in comparison with the control group with significant association p-value <0.0005, this result has been in disagreement with a study [20], found that no significant association between them this may be because lack knowledge about healthy habits that decrease their susceptibility for UTI such as drinking plenty of water. Regarding drying perineum after urination has been higher amongst the pregnant women with developing UTI (46%) in comparison with the control group (22%) with a considerable association of p-value <0.%. This result has been in agreement with a study [14], and [17], Reported that the forward wiping direction of the perineum area has been significantly related to the UTI, This could be explained the dominance of E.Coli is a normal intestinal flora which could be forced to the urethra via the forward washing or drying of the perinea area [28]. Urination delay and decrease frequency of urination per day have significant associated with developing UTI, these results are similar with finding of the study [20], reported that the voluntary delay of the urination and the decrease in the urination frequency have been related to the UTI in the pregnant women, which could be a result of the fact that the increase in the frequency of the urination has been the urinary tract and urination delay, in particular for the pregnant women who nourish rich urine, girls have grater opportunity for the multiplication of the micro-organisms [29].Also significant association was found between increase sexual intercourse frequently and developed UTI were at greater risk of having UTI, similar finding were reported in study [17] had discovered that the frequency of the sexual intercourse has been related to the UTIs, which might be a result of the mechanical sexual manner enhancing the entry of E.coli one of the uro pathogenic bacteria [30].

Conclusions:

This study shows the most age group frequent is less than 25years,and the risk factors associated with UTI was: Age, Family History, third trimester of pregnancy, short birth space interval, drying perineum after urination and delay and decrease frequency of urination per day have significant associated with developing UTI. significant association was found between increase sexual intercourse frequently and developed UTI, also No urination after coitus ,before sleep and husband not wash genitals before coitus were found to be significant risk factor for UTI, and significant association was found between increase frequently of previous attack of UTI and develop UTI were at greater risk of having UTI.

Conflicts of Interest:
The authors declare no conflict of interest. The funders had no role in the design of the study, in the collection, analyses, or interpretation of data, in the writing of the manuscript, or in the decision to publish the results.

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