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KNOWLEDGE, ATTITUDE AND PRACTICE OF PREGNANT WOMEN REGARDING URINARY TRACT INFECTION IN PREGNANCY IN MOSUL CITY, IRAQ

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ABSTRACT

Background: Pregnancy predisposes women to developing a urinary tract infection, Certain co-morbidities have been associated with increased risk of the infection during pregnancy. The prevalence of urinary tract infection in pregnancy is related closely with socio-economic status, diabetes mellitus, recurrent infection, and anatomical abnormalities of the urinary tract. Knowledge and practice of pregnant women concerning urinary tract infection are important factors in prevention of developing the infection. **Aim of the study**: To assess knowledge Attitude and practice of pregnant women regarding urinary tract infection in pregnancy and demonstrate the association between sociodemographic characteristics and Knowledge, attitude and practice of those women. **Methodology**: a cross sectional study carried out in Mosul city- Iraq; that involved 400 pregnant women attending primary health care centers and gynecological consultation units in hospitals, a structural questionnaire containing sociodemographic data, knowledge, attitude and practice of pregnant women concerning urinary tract infection. **Results**: 400 pregnant women were contributed, 44% of pregnant women have fair knowledge mainly regarding symptoms for urinary tract infections which represent (86.3%), symptoms with pregnancy like contraction (78%). (81%) pregnant women have good attitude about urinary tract infection in pregnancy mainly regarding consulting a doctor (83.3%), and visiting antenatal care (74.5%). Regarding practice: 68% of pregnant women have fair practices about urinary tract infection mainly towards regular antenatal care (95.3%), and (64.3%) personal hygiene. **Conclusions**: less than half of the respondents178 (44%) had fair knowledge, 325 (81%) pregnant women have good attitude, and 270 (68%) of pregnant women have fair practices about urinary tract infection in pregnancy.

INTRODUCTION

Urinary tract infections (UTIs) in pregnant women continue to pose a clinical problem and a great challenge for physicians. The consequences of untreated UTI for both the mother and the unborn child are more severe.[1] There is a much higher risk (up to 40%) of progression to pyelonephritis, and possibly increased risk of pre-eclampsia, premature birth and low neonatal birth weight. That is related to profound structural and functional urinary tract changes, typical for pregnancy.[2]

Etiological agents: Escherichia coli (E. coli) is the major etiological agent in causing UTI, which accounts for up to 90% of cases.1 Proteus mirabilis and Klebsiella pneumoniae are less frequent offenders. Less commonly, enterococci including Gardnerella vaginalis and Ureaplasma ureolyticum are known agents in UTIs. Gram-positive organisms are even less common in which Group B streptococcus, Staphylococcus saprophyticus and Staphylococcus haemolyticus are recognised organisms.[4]

Causative agents E. coli accounts for the majority of urinary tract infections, as high as 80%. Klebsiella, Enterobacter, and Proteus species, and enterococci infrequently cause uncomplicated cystitis and pyelonephritis.[5] Candida species are an important cause of fungal UTIs especially in immunosuppressed patients and in those with in-dwelling catheters. Group B Streptococcus and the genital mycoplasm Ureaplasma urealyticum are rare causes of UTI and are of significance particularly in pregnancy because of their association with chorioamnionitis.[5,6] as well as viruses in very small percentage. **Classification of UTI in**

pregnancy; Classification of urinary tract infections is important for the purpose of research, quality measurement and teaching. Classification is based on,[7] The clinical presentation and anatomical level of infection. There are two major types of UTI in pregnancy. (asymptomatic, Symptomatic) consist of: Acute cystitis**,** Acute pyelonephritis.[8-11] Other classification: Underlying risk factors and microbiological findings. Risk factor classification is also important in assessment of all patients with a UTI. Pregnancy is considered an extra-urogenital risk factor for urinary tract infections with severe outcomes.[12,13]

1. Causative pathogens and their susceptibility for treatment pathogen susceptibility in the classification for UTI informs treatment choice.[5]
2. The grade and severity of infection

Risk factors of UTI in pregnancy; Pregnancy predisposes women to developing a UTI; however, a broader risk factor analysis is important in assessing any additional therapeutic measure that might be required, such as drainage in case of renal obstruction or abscess. Certain co-morbidities have been associated with increased risk for UTI during pregnancy. The prevalence of UTI in pregnancy is related closely with socio-economic status.

Risk factors specific to women for UTIs include.[14,15]

1. **Female anatomy.** A woman has a shorter urethra than a man does, which shortens the distance that bacteria must travel to reach the bladder.
2. **Sexual activity.** Sexually active women tend to have more UTIs than women who aren't sexually active. Having a new sexual partner also increases your risk.
3. **Certain types of birth control.** Women who use diaphragms for birth control may be at higher risk, as well as women who use spermicidal agents.
4. **Menopause.** After menopause, a decline in circulating estrogen causes changes in the urinary tract that make the women more vulnerable to infection.
5. **Urinary tract abnormalities.** urinary tract abnormalities that cause obstruction of urine or reflux have an increased risk of UTIs.
6. **Blockages in the urinary tract.** Kidney stones or an enlarged prostate can trap urine in the bladder and increase the risk of UTIs along with stricture.
7. **A suppressed immune system.** Diabetes and other diseases that impair the immune system — the body's defense against germs — can increase the risk of UTIs.
8. **Catheter use.** People who can't urinate on their own and use a (catheter) to urinate have an increased risk of UTIs. This may include people who are hospitalized, people with neurological problems that make it difficult to control their ability to urinate and people who are paralyzed.
9. **A recent urinary procedure.** Urinary surgery or an examination of urinary tract that involves instruments can both increase your risk of developing a urinary tract infection.

Aim of the study: The study aim To assess knowledge Attitude and practice of pregnant women attending PHCC and clinics in Mosul regarding urinary tract infection in pregnancy.

MATERIALS AND METHODS

Study design, setting, and population: A cross sectional study was conducted in Mosul city- Iraq; that involved 400 pregnant women attending some PHCC and gynecological and obestetric counseltation clinic in hospitals **,**The centers assigned in the study were:Al-Batool teaching hospital**,**Al-Khansaa teaching hospital**,** Al-Noor primary health center.

Inclusion criteria: after random sampling for pregnant women attending PHCC and hospitals for different reasons (ante natal care, vaccination, other illness, pregnancy complication) were taken and interviewed after giving verbal consent.

Exclusion criteria: the women who refuse to do interview and the women who was ill looking or in pain.1st part: Sociodemographic and obstetrical data of the patient: age, residency, education, job, history of UTI, parity, Gestational age of current pregnancy. 2nd part: Knowledge, attitude, and practices regarding UII in pregnancy.

RESULTS

In this study; 400 pregnant women were contributed, Out of the total participants; there were 282 (70.5%) pregnant women aged below 30 years and 118 (29.5%) aged 30 years or more. 14.0% of participants were employed and 86.0% were housewives. 27.8% were nulliparous and 72.3% multiparous. Educational level of primary school or less formed 50.8% while secondary school or higher formed 49.2%; 79.5% were lives in urban area, 74.3% were in third trimester, and 91.5% with previous history of UTI. Table 1 represent socio-demographic characteristics of studied sample.

Table 1: Socio-demographic Characteristics of studied sample (n=400).

Variables	N (400)	% (100%)
Age Group		
< 30 years	282	70.5%
≥ 30 years	118	29.5%
Residency		
Rural	82	20.5%
Urban	318	79.5%
Job		
Employer	56	14.0%
Housewife	344	86.0%
Parity		
Nulliparous	111	27.8%
Multiparous	289	72.3%
Education		
< secondary school	203	50.8%
≥ secondary school	197	49.2%
Gestational age		
1st trimester	27	6.8%
2nd trimester	76	19.0%
3rd trimester	297	74.3%
History of UTI		
No	34	8.5%
Yes	366	91.5%
Total	400	100.0%

Table 2: Pregnant women distribution according to their knowledge regarding urinary tract infection in pregnancy.

Knowledge of pregnant women					
No		Yes		I don't know	
N	%	N	%	N	%
UTI is caused by bacteria?					
45	11.3%	257	64.3%	98	24.5%
Symptoms of UTI are dysuria and frequency?					
15	3.8%	345	86.3%	40	10.0%
Lower abdominal pain and contraction could happen in UTI?					
51	12.8%	312	78.0%	37	9.3%
There is risk of abortion and premature birth in UTI?					
158	39.5%	137	34.3%	105	26.3%
UTI in pregnancy can be asymptomatic?					
138	34.5%	137	34.3%	125	31.3%
Repeated vomiting and nausea can be due to UTI?					
109	27.3%	180	45.0%	111	27.8%
DM and low immunity are risk factors for UTI?					
96	24.0%	187	46.8%	117	29.3%
Hormonal effect makes UTI more common in pregnancy?					
73	18.3%	209	52.3%	118	29.5%

There were 103 (26%) pregnant women have good knowledge about urinary tract infection in pregnancy, 178 (44%) pregnant women have fair knowledge, and 119 (30%) pregnant women have poor knowledge about urinary tract infection in pregnancy. Figure 1.

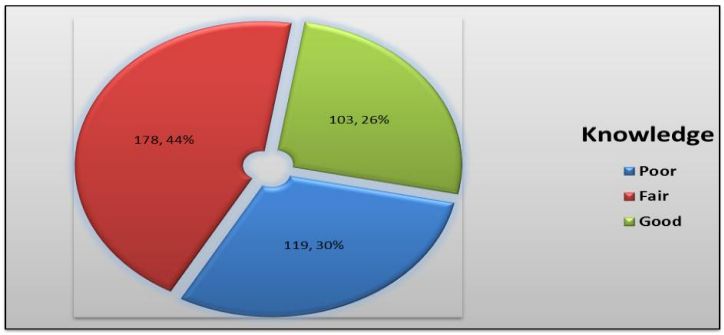

Figure 1: Knowledge of pregnant women according to urinary tract infection in pregnancy.

Table 3: Relation between sociodemographic features of pregnant women with their knowledge about urinary tract infection in pregnancy.

Variables		Knowledge						P
		Poor		Fair		Good		
		N	%	N	%	N	%	
Age Group	< 30 years	92	77.3%	130	73.0%	60	58.3%	0.005
	≥ 30 years	27	22.7%	48	27.0%	43	41.7%	
Residency	Rural	40	33.6%	36	20.2%	6	5.8%	<0.001
	Urban	79	66.4%	142	79.8%	97	94.2%	
Job	Employer	9	7.6%	26	14.6%	21	20.4%	0.022
	Housewife	110	92.4%	152	85.4%	82	79.6%	
Parity	Nulliparous	41	34.5%	45	25.3%	25	24.3%	0.15
	Multiparous	78	65.5%	133	74.7%	78	75.7%	
Education	< secondary school	78	65.5%	85	47.8%	40	38.8%	<0.001
	≥ secondary school	41	34.5%	93	52.2%	63	61.2%	
Gestational age	1st trimester	5	4.2%	19	10.7%	3	2.9%	0.049
	2nd trimester	27	22.7%	32	18.0%	17	16.5%	
	3rd trimester	87	73.1%	127	71.3%	83	80.6%	
History of UTI	No	15	12.6%	15	8.4%	4	3.9%	0.067
	Yes	104	87.4%	163	91.6%	99	96.1%	

Table 4: Distribution of studied sample according to their answers about attitude regarding urinary tract infection in pregnancy.

Attitude of pregnant women	Disagree		I don't know		Agree	
	N	%	N	%	N	%
Do you think that UTI will affect fetus?	59	14.8%	102	25.5%	239	59.8%
Do you think that antenatal care important in protection and treatment of UTI?	49	12.3%	53	13.3%	298	74.5%
Do you think that herbal substances aid in treatment of UTI?	122	30.5%	116	29.0%	162	40.5%
Do you think that you should go to doctor for treatment of UTI?	19	4.8%	48	12.0%	333	83.3%
Do you think UTI normal physiology in pregnancy?	90	22.5%	76	19.0%	234	58.5%
Do you think UTI in pregnancy can be prevented?	65	16.3%	95	23.8%	240	60.0%
Do you think good hygiene is important for preventing UTI?	58	14.5%	46	11.5%	296	74.0%

Among pregnant women, there were 325 (81%) pregnant women have good attitude about urinary tract infection in pregnancy, 74 (19%) pregnant women have fair attitude, and one pregnant woman only had poor attitude about urinary tract infection in pregnancy; figure 2.

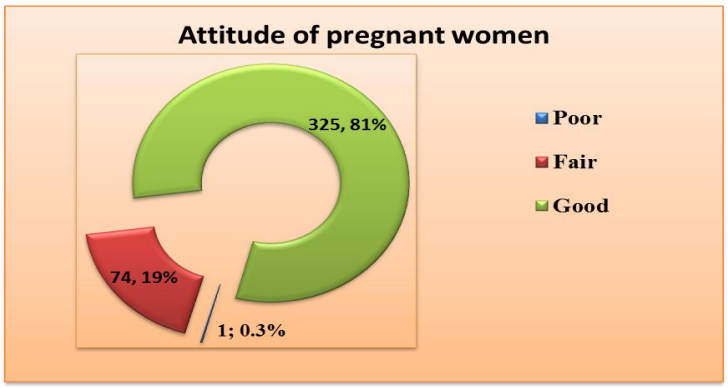

Figure 2: Attitude of pregnant women about urinary tract infection in pregnancy.

Table 5: Relation between sociodemographic features and pregnant women's Attitude about urinary tract infection in pregnancy.

Sociodemographic features		Attitude of pregnant women						P
		Poor		Fair		Good		
		N	%	N	%	N	%	
Age Group	< 30 years	0	0.0%	48	17.0%	234	83.0%	0.144
	≥ 30 years	1	0.8%	26	22.0%	91	77.1%	
Residency	Rural	0	0.0%	7	8.5%	75	91.5%	0.028
	Urban	1	0.3%	67	21.1%	250	78.6%	
Job	Employer	1	1.8%	8	14.3%	47	83.9%	0.033
	Housewife	0	0.0%	66	19.2%	278	80.8%	
Parity	Nulliparous	0	0.0%	21	18.9%	90	81.1%	0.89
	Multiparous	1	0.3%	53	18.3%	235	81.3%	
Education	< secondary school	0	0.0%	38	18.7%	165	81.3%	0.59
	≥ secondary school	1	0.5%	36	18.3%	160	81.2%	
Gestational age	1st trimester	0	0.0%	5	18.5%	22	81.5%	0.73
	2nd trimester	0	0.0%	18	23.7%	58	76.3%	
	3rd trimester	1	0.3%	51	17.2%	245	82.5%	
History of UTI	No	0	0.0%	9	26.5%	25	73.5%	0.44
	Yes	1	0.3%	65	17.8%	300	82.0%	

Table 6: Practices of pregnant women distribution about urinary tract infection in pregnancy.

Practices	Never		Sometimes		Always	
	N	%	N	%	N	%
Do you Drink plenty of water	0	0.0%	220	55.0%	180	45.0%
Do you urinate after intercourse?	16	4.0%	189	47.3%	195	48.8%
Do you wipe from front to behind?	29	7.3%	114	28.5%	257	64.3%
Do you use irritating feminine products?	162	40.5%	174	43.5%	64	16.0%
Do you eat healthy diet and avoiding spice and caffeine?	102	25.5%	195	48.8%	103	25.8%
Do you have regular antenatal care?	19	4.8%	0	0.0%	381	95.3%
You should do GUE to diagnose UTI?	40	10.0%	246	61.5%	114	28.5%

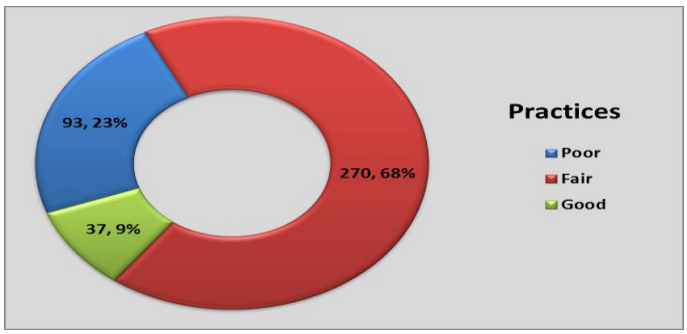

Figure 3: Practices of pregnant women in urinary tract infection during pregnancy.

Table 7: Relation between sociodemographic features and practices of pregnant women regarding urinary tract infection in pregnancy.

Sociodemographic features		Practices of pregnant women						P
		Poor		Fair		Good		
		N	%	N	%	N	%	
Age Group	< 30 years	62	22.0%	193	68.4%	27	9.6%	0.89
	≥ 30 years	31	26.3%	77	65.3%	10	8.5%	
Residency	Rural	8	9.8%	61	74.4%	13	15.9%	0.001
	Urban	85	26.7%	209	65.7%	24	7.5%	
Job	Employer	15	26.8%	35	62.5%	6	10.7%	0.69
	Housewife	78	22.7%	235	68.3%	31	9.0%	
Parity	Nulliparous	25	22.5%	77	69.4%	9	8.1%	0.84
	Multiparous	68	23.5%	193	66.8%	28	9.7%	
Education	< secondary school	40	19.7%	144	70.9%	19	9.4%	0.22
	≥ secondary school	53	26.9%	126	64.0%	18	9.1%	
Gestational age	1st trimester	6	22.2%	18	66.7%	3	11.1%	0.77
	2nd trimester	14	18.4%	56	73.7%	6	7.9%	
	3rd trimester	73	24.6%	196	66.0%	28	9.4%	
History of UTI	No	14	41.2%	18	52.9%	2	5.9%	0.034
	Yes	79	21.6%	252	68.9%	35	9.6%	

DISCUSSION

Urinary tract infection (UTI) is one of the most common health problems in pregnant women that need to seek medical care.[22] This study done to assess knowledge attitude and practice of pregnant women regarding urinary tract infection in pregnancy and the association of some sociodemographic criteria with the KAP of a sample of pregnant women in Mosul city, 2021.

Sociodemographic features: In this study, 400 pregnant women were contributed, 70.5% of them aged below 30 years, 86.0% were housewives. 72.3% were multiparous. Educational level of primary school or less formed 50.8%, 91.5% of them had a previous history of UTI. This had few differences and similarities from a descriptive and analytical study in 2014 at Kirkuk City, The results of that study revealed that (31.1%) & (31.1%) of women in the sample were in the age groups (20-24) & (25-29) years respectively. Nearly one third of the subjects (32.2%) were of primary school graduates, (83.3%) were housewives, almost all of them (98.8%) were livening in urban areas, and (65%) were from low socioeconomic class.[16]

knowledge of pregnant women regarding UTI: The present study found that only (26%)of the pregnant women have good knowledge concerning urinary tract infection in pregnancy, the larger fields of knowledge were concerning symptoms for UTI, association of lower abdominal pain and contraction with UTI, causes and risk factors for developing UTI during pregnancy. This differs from the previous study by Mohammad M et al, in assessment of women's knowledge about UTI, the results showed that " inadequate knowledge " for general information about UTI causes, mode of transmission and investigation. while " adequate knowledge " of women was about sign &symptoms of UTI, treatment, and preventive methods.[53] This is well supported by a cross sectional study conducted in Iran involving 180 mothers who attend in Karaj health center in 2014 , the results shows that only 6.1% of pregnant women had good knowledge about Urinary tract infection.[54] While a study in Malaysia by Santoso et al reported that only 9 (9.1%) of respondents women had good knowledge and, 69 (69.7%), and 21(21.2%) subjects had fair, and poor knowledge, respectively.[55] Both studies agreed that the knowledge of women was mainly about general information, symptoms of UTI and to less percentage towards preventive measures of having the infection during pregnancy.[17]

In the present study there is significant association of level of knowledge with selected demographical variables; Age of women, housewives, and educational level below secondary school. The result of present study was supported by a retrospective study at (King Abdulaziz University Hospital). The sample size was about 10000 pregnant women in 2017 which found a significant association between level of knowledge and age, occupation but no significance found with place of living and education. Another study in Egypt by Dimetry *et al*, 2017 on UTI knowledge and prevalence also showed the presence of association between low income level, low education, age of women and UTI status and knowlege. This could be due to the relation of low socioeconomic status with nutrition and immunity especially in those pregnant females.[18]

Attitude of pregnant women regarding UTI: The present study found that (81%)of pregnant women have good attitude about urinary tract infection in pregnancy; the majority had believed that they should consult doctor for treatment, UTI can be prevented, and hygiene is important for preventing UTI but more than half of women in the study thought that UTI is a normal

physiology during pregnancy. A significant association between good attitude with employed women and that lives in rural area were noticed in this study.These results are agreed with a study determined the knowledge, attitude, and practices, of pregnant women regarding UTI in Philippine, the results in which revealed that the majority of pregnant women have a positive attitude against UTI. Educational qualification and socioeconomic status showed a significant association with the attitude of pregnant women. This is also agreed with a study done by Tehran University of Medical Sciences, 2014, which showed that belief and attitude of women is improving This might suggest that the intervention had been useful in increasing the good attitude of the experiment group to promote UTI (preventive good behaviors) among pregnant women so it can be said that the participants of their study believed that there is a possibility of getting the complications of recurrent UTI,(such contractions and sepsis).

Practice of pregnant women concerning UTI: this study found that only **9%** of pregnant women have **good** practices and **68%** of them have **fair** practices about urinary tract infection in pregnancy. Low intake of fluids were reported to be associated with UTI in women in our study, genital hygiene practices such as frequency of coitus, urinating after coitus, washing genitals post-coitus, taking baths, frequent replacing of underwear and washing genitals from front to back were mentioned by women in the sample as a good practice that could reduce frequency of UTIs, as found in other studies. Women who usually urinated within 15 minutes of intercourse had a lower likelihood of developing a UTI than women who did not urinate afterwards .A descriptive-analytic study was conducted in Zahedan city, Iran during 2014 supported these finding and reported that the practice score of only 38% of the study sample were assessed as good. There was a significant difference between the employed women and housewives in terms of good practice, also there was a significant positive correlation between the knowledge score and scores of both attitude and practice.There was no statistical significant association between age of the pregnant women and good practice concerning UTI, but a significant difference with living in rural are, and previous history of UTI. Similar finding also reported by Hamdan *et al* (19) on UTI in Sudan.

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