

## Assessment Knowledge and Practice of Pregnant Women about Urinary Tract Infection

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### Abstract

**Background:** Urinary tract infections are among the most typical health problems during pregnancy worldwide, particularly in developing countries. By increasing pregnant women's knowledge and participation in healthy lifestyle activities, urinary tract infections should be efficiently treated with the right therapy (self-care practices). **The aim:** To assess pregnant women knowledge and practices towards urinary tract infection. **Samples:** 320 pregnant women were used as a convenient sample. **Research design:** This study used a descriptive cross-sectional research design. **Setting:** Four maternal and child health centers in El-Badary city and its surrounding villages. **Tools:** Data were gathered using a structured interviewing questionnaire that involved three parts personal characteristics, women's knowledge and practices regarding UTI. **Results:** About 61.3% of studied women had an average ,89.1% of studied women had unsatisfactory practices; statistically significant relation between total women's knowledge and practices score (p-value <0.01) **Conclusion:** The results of this study shed light on gaps in pregnant women's awareness and self-care practices about UTI. **Recommendation:** The study suggested holding lectures on UTI and its impact on mothers and their children to enhance the success of pregnancies. Urine culture tests should be performed as a routine maternal cares from the first trimester and continues later in pregnancy. Guidelines about preventive measures of UTI for pregnant women should be providing.

**Keywords:** Knowledge, Practices, pregnant women & Urinary Tract Infection.

### Introduction:

An infection of the kidneys, ureters, bladder and urethra is known as a urinary tract infection (UTI). Due to a variety of etiological reasons, UTI is one of the most common infections, affecting 250 million people annually and killing 150 million people. (Mohamed & Eaid, 2018). Urinary tract infections are one of the most typical issues that pregnant women deal with that are brought on by bacteria (UTI). According to estimates, bacteriuria affects up to 40% of pregnant women overall. From week 6 through weeks 22–24 of pregnancy, there is an increase in the prevalence of UTI in pregnant women (Azami et al., 2019).

Up to 70% of pregnant women experience glycosuria, which promotes bacterial development in the urine, in addition to increased urinary stasis and ureterovesical reflux caused by decreased urethral tone, decreased bladder tone, and increased bladder volume. Increases in urine progestins and estrogens may reduce the lower urinary tract's capacity to fend against invasive microorganisms. Pregnancy-related UTIs can occur for a variety of reasons (Mahmouda, et al., 2020).

Additionally, women with higher parity, older ages, lower socioeconomic status, sickle cell trait, a history of urinary tract infections, depression, insufficient water intake, low educational status, catheterization, anemia, poor personal hygiene, limited access to

spermicide-coated condoms, and limited access to qualified healthcare providers are more likely to experience bacteriuria. (Behzadi et al, 2019).

The same organisms that cause UTI in non-pregnant patients also cause UTI in pregnant women. Escherichia coli is responsible for 80–90% of UTIs. Staphylococcus saprophyticus is responsible for 5–10% of UTIs, whereas Proteus, Pseudomonas, Klebsiella, and Enterobacter are responsible for long-lasting cases. These infections are rare and are linked to structural abnormalities of the urinary system (Odoki et al., 2019).

There are two categories of urinary tract infection in pregnancy: asymptomatic (ASB) and symptomatic bacteriuria. Women with asymptomatic bacteriuria still have germs in their urinary tracts but show no signs of it. While the second category is characterized by urinary tract infections in the upper or lower urinary systems, such as acute pyelonephritis or acute cystitis (Abdel-Aziz et al., 2021).

The woman usually reports burning and pain on urination. She reports frequency and urgency and voids small amounts at a time. Also has a low –grade fever and possibly supra-pubic pain. In addition to burning, pain, urgency and frequency, the woman with pyelonephritis presents with a high spiking fever that rises. Often she has shaking chills and reports nausea and vomiting. Flank pain and tenderness are

common. Another indication of a urinary tract infection is murky urine with an unpleasant odor (Al Youssef et al., 2020).

Pregnancy-related UTIs can have devastating effects on both the mother and the fetus. Pyelonephritis causes low birth weight, premature labour, preterm birth, hypertension, maternal anemia, preeclampsia, septic shock, amnionitis, deformity or stillbirth, and a higher risk of perinatal death may be associated with these illnesses (Kalinderi et al, 2018).

Prenatal care now includes the prevention, early detection, and rapid treatment of UTI throughout pregnancy. At early prenatal care and again at 28 weeks of pregnancy, all pregnant women should be screened for bacteriuria and treated as charged. Make certain lifestyle modifications (self-care practices) to help avoid or decrease a urinary tract infection, especially between the sixth and 24th week of pregnancy, when infection rates are at their highest. Maintaining ideal urinary health requires practising good cleanliness, making urination a habit, emptying the bladder fully, and other straightforward self-help technique (Badran et al, 2019).

In order to aid in the early diagnosis and treatment of future infections, the nurse encourages comfort, maintains proper hydration, provides patient education, and educates the ladies about the signs and symptoms of urinary tract infections. Pregnant women could be informed about the etiology, risk factors, nature, and preventive measures of UTI in order to simply limit this preventable disease (Nicolle et al, 2019).

Nurses can assist patients with diagnosis, UTI treatment and prevention, empowerment, and promotion of their well-being. Teaching self-care practices and prevention strategies are vital nursing activities for UTI prevention and management during pregnancy. This highlights the need for more planned teaching activities throughout pregnancy in order to guarantee high standards and clients satisfaction (Mohamed et al., 2020)

### Significant of the study:

Urinary tract infection during pregnancy is complicated because of the probable risks to the infant and of critical diseases in the mother even if the infection was asymptomatic (Mohamed, 2020). Between 13% and 33% of pregnant women globally experience UTIs (Abdel-Aziz et al., 2021). Prevalence of UTIs during pregnancy in Egypt ranges from 22 to 35% (Shaheen HM et al., 2020)

According to the majority of research, untreated bacteriuria during pregnancy can result in substantial obstetric issues, including poor outcomes for the mother and the fetus, including intrauterine growth

restriction, pre eclampsia, caesarean delivery, and premature birth (Mohamed et al., 2020)

### Aim of the study:

Assess pregnant women knowledge and practices towards urinary tract infection.

### Research question:

What is the pregnant women knowledge and practices regarding urinary tract infection?

### Subjects and Methods:

#### Research Design:

This study's was a descriptive cross-sectional study.

#### Setting:

This study was conducted at four places of Ante-Natal Care clinics (ANC) and maternal and child health Centers (MCH) of El-Badary center and its villages, that included "El-Eitmania in the East, Nag El-Jazeera in the West, El-Hamamia in the South, El-Nawamis in the North to represent the whole center." these centers provide services to surrounding Urban and Rural areas as antenatal care.

**Sample:** Aconvenient sample was conducted in this study.

**Sample Size:** 320 pregnant women were included in the sample, according the sample size equation:

$$n = \frac{[DEFF * Np(1-p)]}{[(d^2 / Z^2 1-\alpha/2 * (N-1) + p*(1-p))]}$$

$$DEFF \text{ (Design effect)} = 1$$

$$N \text{ (population)} = 1654$$

$$p \text{ (Hypothesized \%)} = 50\% \pm 5$$

$$d \text{ (tolerated margin of error)} = 0.05$$

$$Z \text{ (level of confidence)} = 1.96$$

$$\alpha \text{ (Alpha)} = 0.05$$

$$n = \frac{[1 * 1654 * 50\% \pm 5 (1-50\% \pm 5)]}{[(0.05)^2 / (1.96)^2 - 1 - 0.05 * (1654 - 1) + 50\% \pm 5 (1-50\% \pm 5)]} = 7$$

$$n = 320 \text{ pregnant women}$$

#### Inclusion criteria:

- All Pregnant women "prime & multi"
- Pregnant women whom are eligible and willing to participate in the study.

#### Exclusion criteria:

- All pregnant women who refused to participate in the study

**Tools of data collection:** Structured interview questionnaire were utilized to collect data of the present study.

Structured interview questionnaire divided into three parts. It was developed by the researcher after reviewing and utilizing the most recent and relevant literature.

#### Part I:

- a) Personal data included name, age, residence, educational level, and working status.
- b) **Pervious obstetrical history:** included gravidity, parity, and history of pervious abortion...etc.
- c) **Current obstetric data:** included gestational age, spacing from last delivery or abortion, any

pregnancy complications as" preeclampsia, gestational diabetes.

**Part II:** Women's Knowledge about urinary tract infection as (concept, risk factors, signs and symptoms, and complications...etc.)

**Scoring system of the knowledge:**

It included six questions (from them 5 had multiple answers) to assess pregnant women's knowledge regarding urinary tract infection. The total score of knowledge consisted of (37) points. Each correct answer took two mark, incorrect and do not know answers took one. The total score was 74. The score of each item summed up and then converted into a percent score. It categorized as follows (Elfatah et al., 2020):

- **Poor knowledge** <60% of total knowledge score (<45 score).
- **Average knowledge** 60-75 of total knowledge score (45-64 score).
- **Good knowledge** > 75% of total knowledge score (≥65)

**Part III:** to assess women's practices and comprised personal hygiene and habits, which included the type of underwear, frequency of changing it, hand washing before and after toileting, perianal wiping practice after toileting, frequency of micturition, etc.

**Practice scoring system:**

It involved 12 items, for each one done two score was given and one for not done, the total score involved 26 (Al-Kashif, 2019).

**The total self-protective measures score was calculate as the following:**

- **Unsatisfactory:** < 75% of total measures score (< 20 score).
- **Satisfactory** > 75% of total measures score (≥20 score)

**Validity and reliability:** Face validity was done by 3 experts from Maternal & Newborn Health Nursing staff who reviewed the tools for clarity, relevance, and comprehensiveness. Modifications were done and correction was carried out accordingly and then the tools were designed in their final format and tested for reliability. The internal consistency of the tool scale was calculated by using Cronbach's Alpha; and it was 0.790.

**Pilot study:** About 10% (32 women) of the population participated in a pilot study to evaluate the study tools' clarity, applicability, and relevance. As there were no changes made to the tools, the pregnant women who took part in the pilot study were involved. It took nearly 3 weeks to finish pilot study.

**Field work:** The study's data collection process lasted roughly 7 months, commencing at the beginning of September 2021 and ending at the end of March 2022. The following were involved:

**Procedure:**

- The ethics committee of the nursing faculty gave authorization for the study to be conducted. After describing the goal of the study, the director of the Ante-Natal Care (ANC) clinics & (MCH) of El-Badary city "Assiut Governorate" received an official letter from the dean of the nursing faculty.
- Informed consent was obtained from each pregnant woman prior to her contribution in the study; also anonymity and confidentiality are assured through coding all of data.
- The researcher underlined that the pregnant women's involvement was voluntary and that they had the right to refuse and might withdraw from the study at any moment.
- Before any data was collected, the researcher met the pregnant women, gave an introduction and explained the study's objectives to those who agreed to participate.
- Each pregnant women involved in the study was interviewed individually to collect data regarding personal data, obstetrical history, current obstetrical data, women's knowledge, and practices.
- The researcher explained in details all information about UTIs and their effect on pregnancy outcomes.
- A brochure was given to each mother as a supportive material. It was developed and translated in a simple Arabic language by the researcher based on women's assessment needs, according to literature review, and researcher experience, it included information on UTIs as [what is UTIs, , signs and symptoms, effect of UTIs on pregnancy, risk factors & prevention and treatment of UTIs].

**Administrative design:**

This study was carried out with the approval of Assiut University faculty of nursing's ethical committee, as well as official permission from the director of Ante-Natal Care clinics (ANC) and maternal and child health Centers (MCH) of El-Badary center.

**Ethical consideration:**

Each woman who participated in the study gave oral informed consent, and confidentiality was ensured. The woman is free to leave the study whenever she wants.

**Statistical analysis:**

The data was tabulated, coded, organized, and analyzed using SPSS version 18 (Statistical Package for Social Sciences). The statistics were represented in tables and figures using numbers, percentages, averages, and standard deviation. Using the Chi-square test of significance, a connection between the variables was discovered. Statistical significance difference was considered at P-value ≤0.05 and highly statistical significance was considered at P-value ≤0.01.

**Results:****Table (1): Distribution of studied women according to socio demographic characteristics (N=320)**

Personal characteristics	No.	%
<b>Age group:</b>		
• Less than 25 year	128	40.0
• 25-35 year	163	50.9
• More than 35 year	29	9.1
<b>Age mean± SD</b>	<b>27.61±4.91</b>	
<b>Residence:</b>		
• Urban area	97	30.3
• Rural area	223	69.7
<b>Educational level:</b>		
• Illetrate	36	11.2
• Basic education	43	13.4
• Secondary	117	36.6
• University	124	38.8
<b>Occupation</b>		
• Working	78	24.4
• Not working	242	75.6

**Table (2): Distribution of studied women according to obstetric history (N=320)**

Obstetric history	No.	%
<b>Gravidity:</b>		
• Primigravida	109	<b>34.1</b>
• Multi gravida	211	65.9
<b>Parity:</b>		
• Non	109	34.1
• Primipara	62	19.4
• Multipara	149	<b>46.5</b>
<b>History of abortion:</b>		
• None	255	<b>79.6</b>
• One	52	16.3
• More than one	13	4.1
<b>Number of living children:</b>		
• None	118	36.9
• One	63	19.7
• More than one	139	<b>43.4</b>
<b>Mode of previous delivery:</b>		
• Non	109	34.1
• Normal vaginal delivery	83	25.9
• Cesarean section	128	<b>40.0</b>
<b>No of still birth:</b>		
• None	311	<b>97.1</b>
• One	5	1.6
• More than one	4	1.3
<b>Previous use of family planning method:</b>		
• Yes	78	24.4
• No	242	<b>75.6</b>

Table (3): Distribution of studied women according to current obstetric data (N=320)

Current obstetric data	No.	%
<b>Gestational age:</b>		
• First trimester	71	22.2
• Second trimester	136	<b>42.5</b>
• Third trimester	113	35.3
<b>Spacing from last delivery or abortion:</b>		
• Primigravida	109	34.1
• Less than 1 year	12	3.8
• From 1 -2 years	133	<b>41.6</b>
• More than 2 years	66	20.6
<b>Follow up during pregnancy:</b>		
• Regular	289	<b>90.3</b>
• Irregular	31	9.7
<b>Current pregnancy complications:</b>		
• Non	198	61.8
• Gestational diabetes	6	1.9
• Anemia	57	<b>17.8</b>
• Preeclampsia	22	6.9
• More than one problem	37	11.6

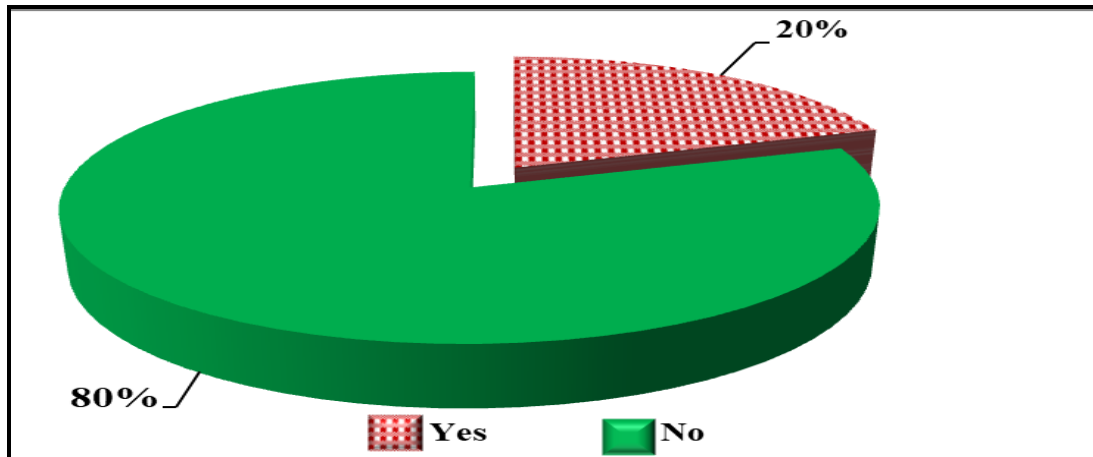


Figure (1): Previous history of UTIs with previous pregnancies (N=320)

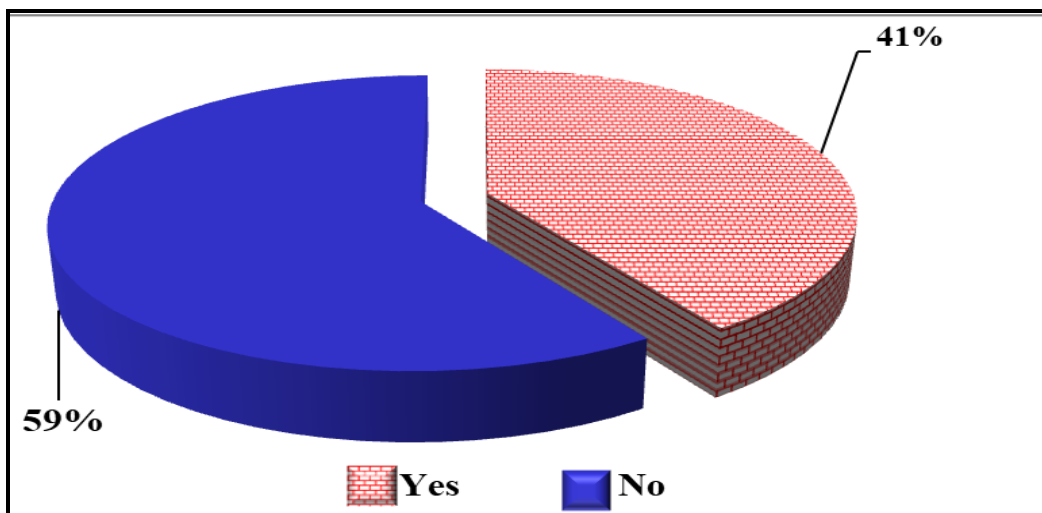


Figure (2) Occurrence of any signs and symptoms of UTI during current pregnancy (N=320)

Table (4): Mean and SD of knowledge score regarding UTI (N=320)

Item	Mean ±SD
Definition and symptoms of UTI	15.89±2.58
Risk factors of UTI	6.53±1.05
Complication of UTI	8.78±1.08
Protective measures from UTI	14.97±1.67
Total knowledge score	46.16±4.24

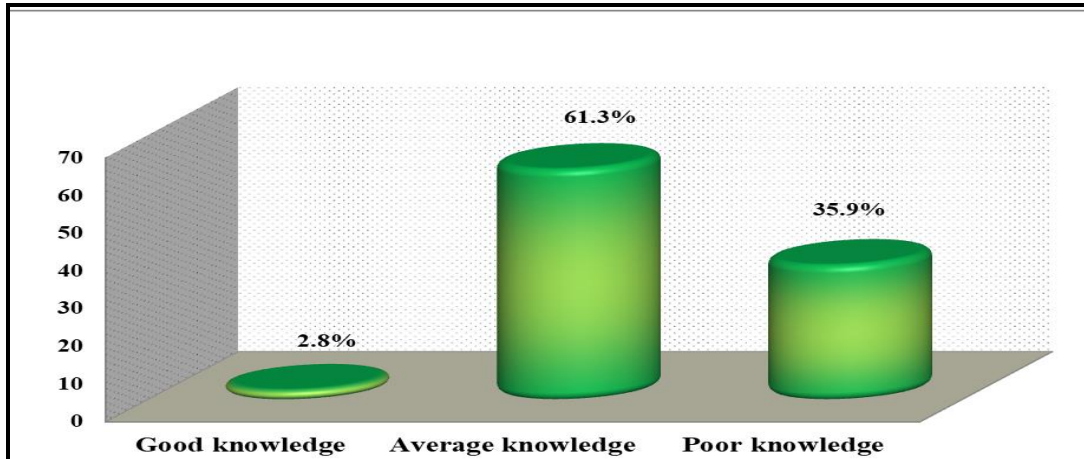


Figure (3): Total knowledge level score regarding UTI (N=320)

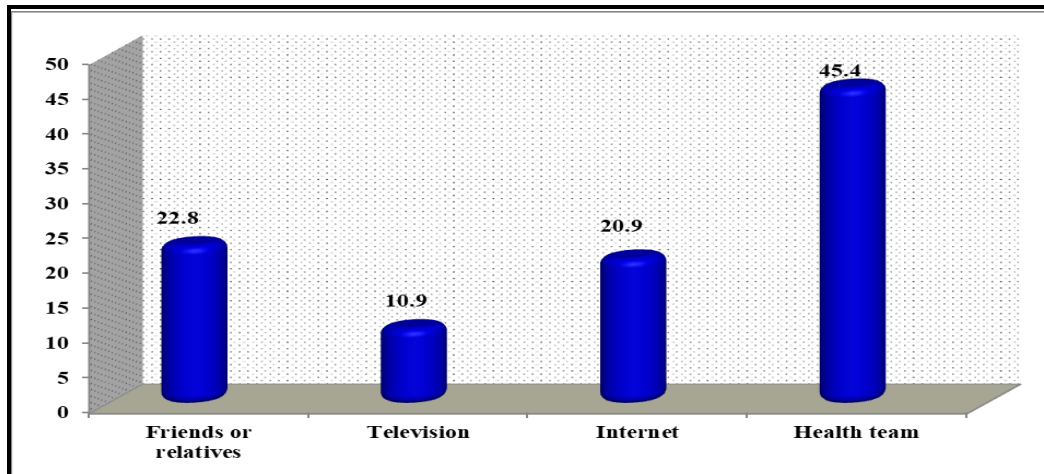


Figure (4): Source of studied women knowledge about UTI (N=320)

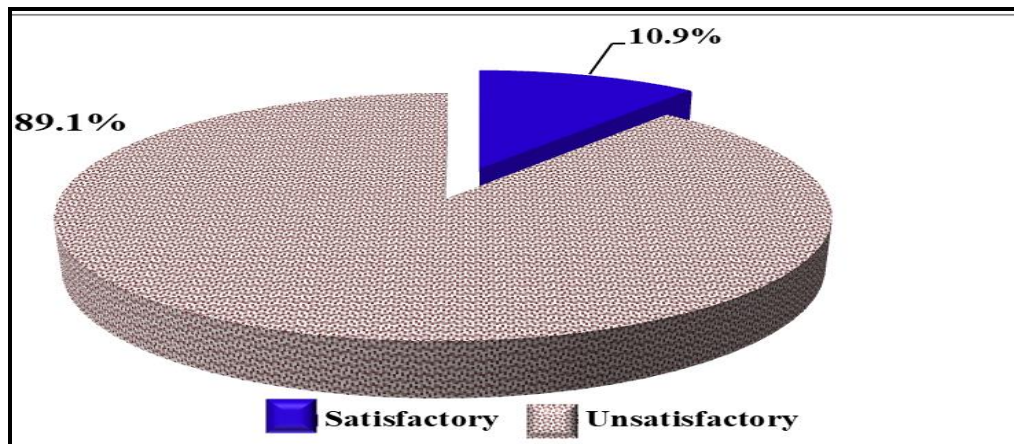


Figure (5): Total practices level score regarding UTI (N=320)

**Table (5): Relation between total knowledge score about UTI and personal characteristics (N=320)**

Personal characteristics	Total knowledge score about UTI						Chi-square	
	Good		Average		Poor		X <sup>2</sup>	p-value
	N (9)	%	N(196)	%	N (115)	%		
<b>Age group:</b>								
Less than 25 year	1	11.2	72	36.7	55	47.8	18.6	<b>0.001**</b>
25-35 year	4	44.4	108	55.1	51	44.4		
More than 35 year	4	44.4	16	8.2	9	7.8		
<b>Residence:</b>								
Urban area	5	55.6	63	32.1	29	25.2	4.4	<b>0.109</b>
Rural area	4	44.4	133	67.9	86	74.8		
<b>Educational level:</b>								
No education	1	11.1	14	7.1	21	18.3	22.1	<b>0.001**</b>
Basic education	0	0.0	21	10.8	22	19.1		
Secondary	2	22.2	73	37.2	42	36.5		
University	6	66.7	88	44.9	30	26.1		
<b>Occupation</b>								
Working	6	66.7	57	29.1	15	13.0	19.1	<b>0.001**</b>
Not working	3	33.3	139	70.9	100	87.0		

(\*\* P&lt;0.01) highly statistical significant difference

(p&gt;0.05) no statistical significant difference

**Table (6): Relation between total practices score about UTI and personal characteristics (N=320):**

Personal characteristics	Total practices score about UTI				Chi-square	
	Satisfactory		Unsatisfactory		X <sup>2</sup>	p-value
	N (35)	%	N (285)	%		
<b>Age group:</b>						
Less than 25 year	12	34.3	116	40.7	1.4	0.487
25-35 year	21	60.0	142	49.8		
More than 35 year	2	5.7	27	9.5		
<b>Residence:</b>						
• Urban area	15	42.9	82	28.8	2.9	0.087
• Rural area	20	57.1	203	71.2		
<b>Educational level:</b>						
• No education	2	5.7	34	11.9	28.9	<b>0.001**</b>
• Basic education	0	0.0	43	15.1		
• Secondary	5	14.3	112	39.3		
• University	28	80.0	96	33.7		
<b>Occupation</b>						
• Working	19	54.3	59	20.7	19.1	<b>0.001**</b>
• Not working	16	45.7	226	79.3		

(\*\* P&lt;0.01) highly statistical significant difference

(p&gt;0.05) no statistical significant difference

**Table (7): Relation between total knowledge and total practice score about UTI (N=320)**

Total practice	Total knowledge score about UTI						Chi-square	
	Good		Average		Poor		X <sup>2</sup>	p-value
	N (9)	%	N (196)	%	N (115)	%		
<b>Satisfactory</b>	1	11.1	29	14.8	5	4.3	8.12	0.017**
<b>Unsatisfactory</b>	8	88.9	167	85.2	110	95.7		

(\*\* P&lt;0.01) highly statistical significant difference

**Table (1):** Illustrates that 50.9% of studied women were in the age group from (25-35) years with a mean and SD of 27.61±4.91. Concerning residence 69.7% were from rural areas. As regard level of education 38.8% of studied women had a university level of education. About 75.6% of studied women had no work.

**Table (2):** Shows that 34.1% of studied women were primigravidas. About 46.5% of studied women were multipara; 79.6% of them had no history of abortion. Regarding number of living children, 43.4% of studied women had more than one child. About 75.6% of them not used family planning method

before. As regard mode of previous delivery, about 40% of studied women had CS.

**Figure (1):** This figure clarifies that 20% of studied women had a history of UTI.

**Table (3):** Illustrates that 42.5% of studied women were in the second trimester of pregnancy, and finds that 41.6% of them had as pacing from 1-2 years between children. About 90.3% and 17.8% of studied women were followed their pregnancy up and had anemia during their current pregnancy.

**Figure (2):** This figure demonstrates that 41% of studied women had signs and symptoms of UTI during current pregnancy

**Table (4):** Demonstrates that  $15.89 \pm 2.58$ ,  $6.53 \pm 1.05$ ,  $8.78 \pm 1.08$  and  $14.97 \pm 1.67$  were mean and SD of definition and symptoms, risk factors, complication, and protective measures from UTI. Also reports that the total knowledge score regarding UTI mean and SD was  $46.16 \pm 4.24$

**Figure (3):** This figure displays that 61.3%, 35.9% and 2.8% of studied women had an average, poor and good knowledge respectively.

**Figure (4):** This figure illustrates that 45.4% of studied women obtained their information from health team followed by friends and relatives (22.8%), internet (20.9%) and finally television (10.9%).

**Figure (5):** This figure shows that 89.1% of studied women had unsatisfactory practices; while 10.9% of them had a satisfactory practices regarding UTI.

**Table (5):** Regarding relation between total women's knowledge level regarding UTI and their socio-demographic characteristics, this table reveals a statistically significant relation between total women's knowledge level and women's age, educational level and occupation, ( $p$ -value  $< 0.01$ ) for all. While, there was no statistically significant relation between women's knowledge and their residence ( $P > 0.05$ ).

**Table (6):** Regarding relation between total women's practices score about UTI and their socio-demographic characteristics, this table demonstrates a statistically significant relation between total women's practices score and women's educational level and occupation ( $p$ -value  $< 0.01$ ) for all. While, there was no statistically significant relation between women's knowledge and their age and residence ( $P > 0.05$ ).

**Table (7):** Regarding relation between total women's knowledge and practices score about UTI, this table illustrates a statistically significant relation between total women's knowledge and practices score ( $p$ -value  $< 0.01$ ).

### Discussion:

Urinary tract infections are among the most typical health problems during pregnancy worldwide,

particularly in developing countries. (El Fatah and others, 2020) By increasing pregnant women's knowledge and participation in healthy lifestyle activities, urinary tract infections should be efficiently treated with the right therapy (self-care practices). These include an understanding of genitourinary tract physiology, reasons for genitourinary infection, complications, and proper health habits (Bono et al., 2022). So the current study aims to assess pregnant women knowledge and practices towards urinary tract infection.

Concerning total knowledge of pregnant women regarding UTI, present study illustrates that more than three fifths, more than one third and only 2.8% of studied women had an average, poor and good knowledge respectively.

These finding in the same line with (Sirjana & Dhakal, 2017), who applied their study to assess primigravida women's knowledge about urinary tract infections and reported that more than three fifths, around one quarter and only one tenth of studied women had an average, poor and good knowledge respectively.

The study conducted by (Prakash & Geeta, 2017), who agreed with the current study, that carried out their study in India to assess the knowledge and attitude of pregnant woman regarding UTI during pregnancy, and demonstrated that more than three quarters of studied women had an average knowledge, more than one fifth had a poor knowledge and no women had a good knowledge. Also agreed with (Elfatah et al., 2020), They conducted their research in Egypt to evaluate pregnant women's knowledge and attitudes on UTI, and showed that more than two thirds, one quarter and only 4.5% of studied women had an average, poor and good knowledge respectively.

Near to previous findings (Hussein et al., 2021), who conducted research in Iraq to evaluate nursing college students' familiarity with preventive measures and to ascertain the relationship between that knowledge and particular demographic information found that more than half, more than one third, and slightly more than one tenth had average, poor, and good knowledge, respectively. All previous studies applied on women and show the defect in the pregnant women's knowledge about UTI that was needed to be improved through providing educational counseling at antenatal clinics.

On the other hand, (Raj et al., 2020), who carried out their study in India to assess knowledge and self-reported practices regarding prevention of UTI among adolescents girls, and represented that more than one half, less than one third, and Studying girls made up fewer than one-fifth, with good, average, and poor knowledge levels.



Also (Alshahrani et al., 2022), who conducted research in Saudi Arabia to evaluate women's knowledge, attitudes, and use of UTI in the Aseer region, and demonstrated that less than two thirds of studied female had a good knowledge and more than one third had a poor knowledge regarding UTI. This dissimilarity may back to working on a different sample type, different culture, and educational level that affect on the knowledge's level of the study sample.

Concerning source of studied women's knowledge about UTI, present study shows that less than one half of studied women obtained their information from health team followed by friends and relatives (less than one quarter), internet (more than one fifth) and finally television (more than one tenth).

Near to previous opinion (Sirjana & Dhakal, 2017) illustrated that more than two fifth of studied women obtained their information from health team and (El-bana & Ali, 2021), who implemented their study in Egypt to evaluate the effect of an educational intervention on pregnant women's knowledge and self-care practices regarding UTI, and reported that more than one third of studied women obtained their information from health team and more than one quarter of them obtained their information from friends and family.

Urinary tract infection (UTI) can make women feel terrible and, if untreated, can lead to significant issues. A UTI is probable in about 60% of females at some stage. Prevention is the key to avoid the persistent and sometimes severe complications of infection, while safer sex and good genital hygiene are central to preventing a UTI (Tracee & Jamin, 2021). There are a number of general guidelines and suggestions that help women to avoid UTI in most instances. These may be conveniently divided into the categories of hygiene, clothing, diet, activities, and medications (John & Michael, 2021).

Regarding total studied women's practices to prevent UTI, current study illustrated that the great majority of studied women had unsatisfactory practices; while more than one tenth of them had a satisfactory practices regarding UTI.

In agreement with previous findings, (Navarro et al., 2019), who used their research to assess pregnant women's knowledge, attitude, practices (KAP), and beliefs regarding UTI using Health Belief Model, and represented that more than three quarters of the studied women had unsatisfactory practices regarding UTI. And (El-bana & Ali, 2021), reported that the majority of studied women had a low practices level regarding care of UTI. This agreement showed the defect in identifying self-reported practices to prevent UTI and enhance interesting to solve this problem by

providing educational classes to pregnant women to educate them how to care for and prevent UTI.

Disagreed with last findings (Hassan Ahmed, 2015), who conducted their research in Egypt to ascertain the impact of intervention guidelines on the self-care routines of pregnant women with urinary tract infections found that more than half, more than a quarter, and more than a fifth of the women under study had high, moderate, and low perceived self-efficacy in carrying out self-care routines for UTI prevention.

Also (Raj et al., 2020), found that less than three fifths (58%) of the studied women had a favorable practices, about more than two fifths of them had neutral practice and no one had unfavorable practice regarding prevention UTI, this difference occurred related to change in the setting where study performed that may affect on culture, customs and practices that women follow.

Higher level of knowledge and better perception were among young aged females, highly educated, and those who worked. Women practice regarding UTIs was also satisfactory especially for seeking for medical consultation and fluid intake. Continuous medical education through health education sessions and health care staff in health care centers may play a crucial role in improving women awareness and practices for UTIs to avoid preventable consequences (Alshahrani et al., 2022). So knowledge and practices may affected by sociodemographic characteristics and obstetric history.

Regarding relation between total women's knowledge level about UTI and their socio-demographic characteristics, present study reveals a statistically significant relation between total women's knowledge level and women's age, educational level and occupation, (p-value <0.01) for all. The knowledge of women and their place of residency did not have a statistically significant relationship, though (P>0.05).

The previous finding was agreed with (Hussein et al., 2021), who achieved their study to assess pregnant women's awareness regarding the UTI, and showed that there was highly significant relation between pregnant woman awareness regarding UTI and educational level and occupation p- value 0.001 for both and there was no relation between pregnant woman awareness regarding UTI and their residency p-value 0.621.

And (Alshahrani et al., 2022), reported that there was highly significant relation between pregnant woman knowledge regarding UTI and educational level and career p- value 0.002 and 0.001 respectively and there was no relation between pregnant woman awareness regarding UTI and their residence p-value 0.303. Also (Navarro et al., 2019), clarified that there was significant relation between pregnant

woman knowledge regarding UTI and age and educational level p- value 0.04 and 0.001 respectively.

Additionally (**Pierre & Clementine, 2018**), who implemented their study to assess the knowledge of pregnant women attending Gitwe Hospital on UTI as well as to demonstrate the risk factors of UTI for pregnant women and to identify the signs and symptoms of UTI for pregnant women, and revealed that there was highly significant relation between pregnant woman knowledge regarding UTI and educational level and age p- value 0.001 for both. This resemblance demonstrated how employment, high educational attainment, and ageing all have a significant impact on the culture of women and how well-informed women are.

Another viewpoint was provided by (**Hussein, et al., 2021**) who used their study to evaluate nursing college students' knowledge of considered preventive measures and to ascertain the relationship between their knowledge and specific demographic information.

As regard relation between total women's practices score about UTI and their sociodemographic characteristics and obstetric history, current study demonstrates a statistically significant relation between total women's practices score and women's educational level and occupation (p-value <0.01) for all, while, there was no statistically significant relation between women's knowledge and their age and residence (P>0.05). regarding relation between total women's practices score about UTI and their obstetric history, present findings display that there were no statistically significant relation between total women's practices score gravidity, parity, history of abortion, number of living children, no of still birth, previous using of family planning method and mode of previous deliver (P>0.05).

In agreement with previous finding, (**Jied, 2016**), who implemented his study to identify the practices of pregnant women to relive UTI during pregnancy, and (**Navarro et al., 2019**), both showed (P>0.05) that there was no relation between the overall women's practices score and the women's age and place of residence. Additionally, it demonstrated that there was no significant relation between the overall score for women's practices and the gravidity and parity of women (P>0.05). This agreement demonstrated that a woman's awareness of UTI is unaffected by her age, where she lives, whether she is pregnant, or her level of parity.

Concerning relation between total women's knowledge and practices score about UTI, existing finding illustrates a statistically significant relation between total women's knowledge and practices score (p-value <0.01). This opinion was supported by

(**El-bana & Ali, 2021**), who revealed a statistically positive correlation between total knowledge and self-practices score before and after the intervention regarding UTI. This result may be due to the improvement of knowledge owing to improved practice.

The findings of **Grigoryan et al. (2014)**, who used their research to demonstrate a positive, highly statistically significant association between total knowledge and total practice score, are in line with these findings. They used their research to determine the best method for diagnosing acute cystitis in an outpatient setting, as well as the best method for treating it in young, healthy women, women with diabetes, and men.

A recent study on the occurrence of UTI signs and symptoms during current pregnancy found that more than two fifths of the analyzed women experience these signs and symptoms. In line with earlier research (**Mahmouda, Kamelb, et al., 2020**), who conducted a study in Egypt to determine the prevalence of UTIs among pregnant women, it was discovered that less than three-fifths of the women in the study reported experiencing UTI signs and symptoms during their actual pregnancies.

Other finding reported by (**Kamal et al., 2021**), who conducted their research to determine whether genital cleanliness and sexual behavior are associated with UTI in pregnant women, and represented that three quarters of studied women having signs and symptoms of UTI during pregnancy. This difference caused by applying the study on different setting and region that affect on women's culture and habits.

As regard current obstetric data, present study illustrates that more than two fifths of studied women were in the second trimester of pregnancy and had a pacing from 1-2 years between children. About the vast majority of the women who were evaluated were followed up on during their pregnancies, and less than one fifth of them experienced anemia during their current pregnancies. These findings agreed with (**El-bana & Ali, 2021**), She explained that more than two fifths of the women in the study were pregnant at the time. Also near to previous finding (**Yakout & Alanaz, 2022**) who conducted their research in Saudi Arabia to see how creating and conducting health teaching sessions affected pregnant women's knowledge and behavior around UTI, and reported that more than one third of studied women were in the second trimester of pregnancy. Agreement back to working on the same sample type and setting.

Concerning history of UTI, current study clarifies that one fifths of studied women had a history of UTI. This was in agreement with (**Hassan Ahmed, 2015**), who demonstrated that less than one fifths of studied women had a history of UTI. Similarity of the

findings caused by exposure of the study's circumstances (sample type and setting).

On the other side (Asiri et al., 2022), who conducted research in Saudi Arabia to evaluate Saudi women's knowledge of the causes of UTI and its consequences in pregnant women, (Hussein et al., 2021), and (Alshahrani et al., 2022), who illustrated that more than two fifths, more than one half, and more than two thirds respectively of the studied women had a history of UTI.

Regarding women's obstetric history, present study reveals that shows that more than one third of studied women were primigravidas. Less than one third of them had a parity from 2-3; the majority of them had no history of abortion. Regarding number of living children, less than one half of studied women had more than one child. More than three quarters of them not used family planning method before. As regard mode of previous delivery, about two fifths of studied women had CS.

In accordance with previous findings, (Hassan Ahmed, 2015), who reported that less than one quarter of studied women were primigravida, More than three quarters of them had no history of abortion. Therefore, disagreed with (Hussein et al., 2021), who showed that more than one half of studied women were prinigravida and primipara. Only 28.0% of them (more than one quarter) had never had an abortion.

### Conclusion:

Defects in women's understanding and self-care habits about urinary tract infection during pregnancy are highlighted by the present study's findings.

### Recommendations:

- An intensive awareness program about proper hygienic practices, health eating habits should be developed and implemented for pregnant women to avoid urinary tract infection.
- Periodical screening of pregnant women with urine culture through the three trimesters for early detection and proper treatment.
- The protocol of management of UTI in pregnancy should be integrated in antenatal care program.
- Simple illustrative booklets and pamphlets in Arabic language about UTI and its prevention should be prepared and made available to pregnant women.
- The public should be informed about the advantages of prenatal care, such as early detection and treatment of UTI during pregnancy, through the mass media.

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