
▪ **Basic Research**

Correlation between Genital Hygiene and Sexual Behavior with Urinary Tract Infections in Pregnant Women

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Abstract

Introduction: Urinary tract infections (UTIs), during pregnancy, are one of the most dangerous health problems, especially in developing countries, which cause serious adverse outcomes for the mother and baby. **Aim:** To investigate Correlation between Genital Hygiene and Sexual Behavior with Urinary Tract Infections in Pregnant Women. **Design:** A descriptive correlational research design was carried out in this study. **Settings:** The sample conducted at the Antenatal Outpatient Clinic of South Valley University's Hospital, Qena general Hospital. **Sample:** A purposive sample was carried out in this study. **Subjects:** was estimated to be 200 women divided into two groups, (study group) 100 women suffering from UTIs, (control group) 100 healthy women without UTIs was carried out in this study. **Tools:** Four tools were used in this study, first: structured interview questionnaire, second: UTIs symptomatology tool, third: laboratory investigation record and fourth: practice assessment sheet. **Results:-**This results showed that there were a statistically significant difference between UTIs and educational level, occupation, gravidity, type of underwear used, daily fluid intake and wrong practices toward genital hygiene and sexual behaviors therefore these factors were indicator factors that might affect the incidence of UTIs, (75%) of pregnant women who had UTIs were symptomatic, a majority (81%) of women with UTIs, had unsatisfactory practice toward genital hygiene and sexual behaviors. **Conclusion:** The prevalence of UTIs was higher among pregnant women who had secondary education, housewives, multigravida, women had unsatisfactory practices toward genital hygiene, sexual behaviors. **Recommendations:** Health education about genital hygiene and sexual habits should be emphasized by antenatal care providers to all pregnant mothers. **Keywords:** Association, Genital hygiene, Practices, Pregnant women, Sexual behavior, Urinary tract infection.

Introduction

Urinary tract infections (UTIs) are one of the most common bacterial infections that affect the urinary tract. This affect both men and women in all ages and have different effects in their implication and squeal. In USA, UTIs represent 8.6 million of the total health care visit and with an estimated economical cost of 1.6 billion dollars, It was found that UTISs are the principal cause of major medical complicated, during pregnancy, affecting 13-33% pregnant around the world. They are also responsible for 10% of all admissions to hospital, during pregnancy, in general **(Foxman, 2014 & Fatima and Al Mussaed, 2018)**.

In addition, they are the second common health problems during pregnancy after anemia **(Amiri et al., 2015)**. In Egypt, the incidence of UTIs in pregnant women related to parity, race, poor genital hygiene, wrong sexual behaviors, and low socioeconomic status. Pregnant women are at increased risk of UTIs starting at the 6th week and peaking during weeks from 22-26, related to the anatomical, physiological, and immunological changes, which occur during pregnancy increase the possibility of UTIs. These changes include dilation of the ureter and renal calyces, which occur due to the progesterone related smooth muscle relaxation and ureteral compression from the uterus growth. Ureteral dilation may be cleared. Decreased bladder capacity marked results in urinary frequency. Vesical ureteral reflux may be observed. These changes increase the risk of UTIs. In addition, already short urethra (3-4 cm in females) and poor of hygiene related to abdominal distension during pregnancy elevating the possibility for bacterial infections during pregnancy **(Johnson, 2017)**.

During pregnancy, UTIs include two types: asymptomatic bacteriuria (ASB) about 2% to 7% and symptomatic bacteriuria. women with asymptomatic bacteriuria have no symptoms. Symptomatic bacteriuria such as cystitis and pyelonephritis. Cystitis is considered an infection of the bladder with presence of some symptoms of local infection such as frequency, dysuria, urgency, suprapubic pain, and hematuria plus presence of clear bacteriuria. Cystitis occurs in 1-4% of pregnancies. Pyelonephritis is considered an infection of the parenchyma of kidney, with presence of symptoms of chills, fever, flank pain, vomiting, malaise, and back pain transparent in the costovertebral angle in addition to marked bacteriuria. Pyelonephritis occurs in 0.5-2% for women during pregnancy and may require hospitalization **(Johnston et al., 2017)**.

Moreover, risk factors of bacteriuria during pregnancy raising with parity, low grade socioeconomic status, wrong sexual activity, diabetes mellitus, chronic urinary retention, history of UTIs in past, neuromuscular dysfunction bladder, structural impairment of urinary tract, renal stones (**Cibulka et al., 2017**). The long carelessness of asymptomatic bacteriuria or symptomatic bacteriuria during pregnancy without treated may lead to responsible for major obstetric complications and adverse maternal and fetal outcomes as anemia, preeclampsia-eclampsia, renal failure, septicemia, intrauterine fetal restriction, acute respiratory distress, premature rupture of membranes (PROM) and prematurity babies (**Lawani et al., 2015& Willy et al., 2015**).

The early detection and early treatment of UTIs are very important and have a vital role to avoid complications for pregnant women and minimize prematurity and prenatal mortality. The nurses and health care providers play a vital role in antenatal screening programs in antenatal clinics. This promotes the assessment of presence UTIs among pregnant women this will establish the knowledge base and enabling early detection and prevention, Treatment of ASB decreases the rate of clinical infection to 3% to 4% and minimize conflicts of differential diagnosis which includes acute intraabdominal disorders like appendicitis, pancreatitis, or cholecystitis as well as pregnancy-related complications like preterm labor, chorioamnionitis, placental abruption (**Matuszkiewicz- Rowinska et al., 2013 & Yadav et al., 2014& Chu and Lowder, 2018**).

Significance of the study

Pregnancy UTIS are one of the most serious critical health problems worldwide, especially in developing countries (**Baker et al., 2015**). In Egypt, the recent national study on a wide statement should be conducted to identify which the group that is liable to developing UTIs, especially in the obstetric field. Most of the research studies have reported many issues of UTIs among pregnant women such as the prevalence and predisposing factors, but the studies have not covered the Upper Egypt. Therefore, the aim of the present study is to investigate association between practices toward genital hygiene and sexual behaviors with urinary tract infections among pregnant women in South Valley University's Hospital and Qena general Hospital.

In Egypt, **Shaheen et al. (2016)** carried out a case-control study of prevalence of UTIs among pregnant women and possible risk factors at Menoufia Governorate. This study cleared that the frequency of UTIs during pregnancy was

32%. **Elzayat et al. (2017)** carried out a cross-sectional study of prevalence of undiagnosed ASB and associated risk factors during pregnancy at two tertiary centers in Cairo, Egypt. The study revealed that the prevalence of ASB in pregnant women was 10%. Moreover, a study done by **Mohamed et al. (2017)** studied the prevalence and risk factors of UTIs among pregnant women at Ismailia city and revealed that 29% of the studied women had UTIs. Through the clinical experience, it was noticed that UTIs are the most common reasons for attempt medical care when the symptoms are strict.

Aim of the study:

- 1- Assessing pregnant women's reported practices regarding genital hygiene and sexual behaviors in two groups
- 2- Investigate correlation between genital hygiene and sexual behavior with urinary tract infections in pregnant women

Research questions:

- What are the practices toward genital hygiene and sexual behaviors among pregnant women?
- Is there correlation between genital hygiene and sexual behavior with urinary tract infections in pregnant women

Subjects and Methods:

Design: A descriptive correlational research design control-study group was used in this study.

Setting: The study conducted at the Antenatal Outpatient Clinic of South Valley University's Hospital and Qena general Hospital.

Subjects:

Sample type: A purposive sample was used in this study.

Sample size: 200 pregnant women divided into two groups (study group) 100 women suffering from UTIs who had positive clinical or/and laboratory findings for UTIs developed by hospital, and (control group) 100 healthy women without UTIs was carried out in this study

Sample size calculation:

Sample size was calculated based on considering level of significance of 5%, study power of 80%, and by using the following formula: $n = [2(Z_{\alpha/2} + Z_{\beta})^2 \times p(1-p)] / (p_1 - p_2)^2$, Type of test = two-sided where n = sample size required, p = pooled proportion of event, $p_1 - p_2$ = difference in proportion of event, $Z_{\alpha/2}$: This depends on level of significance, for 5% this is 1.96, Z_{β} : This depends on power, for 80% this is 0.84, $n = [2(1.96 + 0.84)^2 \times 0.55(1-0.55)] / (0.2)^2 = 97$. Based on the previously mentioned formula, 200 pregnant women were recruited, (0.5) was used as the significance, 0.001 was used as the high significance.

Inclusion criteria included:

Pregnant women who agree to participate in the study, aged from 18 to 40 years, who had positive clinical or/and laboratory findings for UTI developed by hospital and documented in their antenatal sheet (study group), healthy women free from UTI (control group).

Exclusion criteria included:

- D- Women who refuse to participate in the study
- E- Women who had history of >2 episodes of UTI per year, urinary stones or urinary tract anomaly, chronic disease (diabetes mellitus, sickle-cell anemia)
- F- Women who take of any antibiotic or immune system inhibitory drugs in the previous 3 months, or the presence of any abnormal vaginal discharge

Tools of data collection:

Tool I: Structured interviews questionnaire: which included 3 parts:

- Part I: Socio demographic characteristics,
- Part II: Medical and family history of chronic disease,
- Part III: Reproductive history

Tool II: UTI symptomatology tool: For study group, it included symptoms of UTIs added by pregnant women

Tool III: Laboratory investigations record: For study group, it included (urinalysis result conducted by hospital and contained following tests.

Tool IV: Practice assessment sheet: This tool included (personal hygiene, genital hygiene, and sexual behaviors

A scoring system: The items of reported practices included “yes/no” answers and the total score of practices score ranged from 0 to 20 for the 20 items; an incorrect response was answered with 0 and a correct response was answered with 1. The sum of scores for all of the items was calculated, then the level of practice was classified, as satisfactory practices if the score is ($> 60\%$), and unsatisfactory practices if the score was ($\leq 60\%$).

Validity of the tools:

The content validity was tested for clarity, comprehensiveness, appropriateness, and relevance and reviewed by five experts in the obstetrics and gynecology nursing field and the community health nursing field. Modifications were done according to the panel judgment to ensure clarity of sentences and appropriateness of the content.

Reliability of the tools:

The reliability of the tools was assessed through Cronbach's alpha test $\alpha=0.89$. The tools' reliability was estimated by using the Pearson correlation coefficient test to compare variables. The Pearson correlation coefficient for the variables ranged between ($P. < 0.5$) and ($P. < 0.001$), which indicated a highly significant positive correlation between variables of the subjects

Ethical considerations:

Before starting the research, ethical approval was obtained from the scientific research ethical committees of the faculties of nursing, South Valley University's Hospital and Qena general Hospital. The researchers met both medical and nursing directors of the selected settings to clarify the purpose of the study and take their approval. Written consent was obtained from the pregnant women to participate in the study after the objective of the study was explained to them. The researchers informed the pregnant women that, the study was voluntary, they were allowed to not participate and they had the right to withdraw from the study at any time, without giving any reason. Moreover, they were assured that their information would be confidential.

Pilot study

A pilot study was carried out on 10% of the sample (20) pregnant women to observe the clarity and test the feasibility of the research process needed for modifications to develop the final form of the tools. Pregnant women involved in the pilot study were excluded from the study. The researchers were done

modifications for some items in the form of Arabic translation to make them more suitable for pregnant women's perception. The pilot sample was excluded from the main research sample.

- A- Preparatory phase:** It was based on the assessment data was obtained during the interview's questionnaires, literature review, through learning, practices toward genital hygiene and sexual behaviors
- B- Assessment phase:** Data were collected from the beginning of May 2021 to the end of July 2021, in Obstetrics and Gynecology at the Antenatal Outpatient Clinic in South Valley University's Hospital and Qena general Hospital, through three days per week. The researcher was attended to the hospital at 9:00 am to 1:00 pm. The researcher introduced herself to the pregnant women. Clear and simple explanations about the aim and nature of the study were discussed by the researcher with women. The interview took approximately 35-45 minutes for each pregnant woman to answer and fill the questionnaire to assess the practices of pregnant women regarding genital hygiene and sexual behaviors.

Statistical design

Statistical Package for Social Sciences (SPSS) version 21 was used for statistical analysis of the obtained data. Data was presented using descriptive measures in the form of a number, percentage, mean and standard deviation. Chi-square test used for the differences between variables pre- and post-educational program. Pearson correlation test was used to the correlation between variables. The Cronbach's alpha was used to assess the reliability of the second, third tool.

Results

Table (1) Shows that distribution of the women toward to their personal data. There was no statistically significant difference between the study and control groups according to attendance for regular prenatal care and their socio-demographic characteristics. In the study group, according to age it was noticed that more than half (58%) of women their age was between (20-30yrs). Regarding residence, it was observed that more than two third (75%) of the women were living in rural areas. As regard mother's education level, it is obvious that more than quarter of women (37%) had secondary level education. According to mother's occupation it was observed that the majority (87%) of the women was housewife. In control group, according to age it was noticed that near of half (56%) of the studied women their age between (20-30yrs). Regarding residence, it was observed that more than two third (70%) of the women were living in rural areas. As regard to mother's educational level, it is obvious that more than quarter

of the studied women (39%) had secondary level of education. According to mother's occupation it was observed that the majority (85%) of the women were housewives.

Table (2) Illustrates distribution of the women regarding to their reproductive history. There was statistically significant difference between the study and control groups with regard to reproductive history, a majority (72%) of pregnant women with UTIs were multigravida. Compared with more than half (60%) of women without UTIs were primigravida.

Table (3) clears distribution of the women regarding to their practices toward genital hygiene and sexual behaviors. There was highly statistically significant difference ($p < 0.001$) between the study and control groups, in study group, more than half (56%) of women using synthetic underwear, less than one third (29%) of them boiling their underwear, approximately one third (35%) of them taking < 6 glasses of fluid per day, one quarter (25%) of women wash their hands before using toilet. Compared with a majority (81%) of women using cotton underwear, more than two third (70%) of them boiling their underwear, approximately near half (45%) of women getting 6 -8 glasses of fluid per day, more than two third (70%) of women wash their hands before using toilet.

Figure (1) Reveals the distribution the pregnant women according to their level of practices toward genital hygiene and sexual behaviors. There was highly statistically significant difference ($p < 0.001$) between the study and control groups according to their practices toward genital hygiene and sexual behaviors. In study group, the majority (81%) of the women had unsatisfactory practice toward genital hygiene and sexual behaviors but in control group, most of them (89%) of the women had satisfactory practice toward genital hygiene and sexual behaviors,

Figure (2) Clears the distribution the pregnant women according to their UTI symptoms. There was highly statistically significant difference ($p < 0.001$) between the study and control groups according their UTI symptoms, in study group, three quarters (75%) of women suffering from symptomatic UTI, one quarter (25%) of women are suffering from asymptomatic UTI but in control group, all the women don't suffer from any type of UTI.

Figure (3) Illustrates the distribution of the pregnant women according to their results of urine analysis. There was highly statistically significant difference ($p < 0.001$) between the study and control groups according to their urine analysis, in study group, all of the women (100%) had abnormal urine analysis results but in control group, most of them (91%) of the women had normal urine analysis results.

Table (4) Reveals the relationship between women's practices toward genital hygiene and sexual behaviors and presence UTI. There was highly

statistically significance different ($p < 0.001$) between study and control groups, in study group, the majority (70%) of the women who had unsatisfactory practices toward genital hygiene and sexual behaviors had symptomatic UTI. But in control group, all of the women free from UTI regard (89%) of them had satisfactory practices about genital hygiene and sexual behaviors.

Table 1: Distribution of pregnant women according to their personal characteristics

Socio demographic characteristics	Control group N = (100)		Study group N = (100)		χ^2	P Value
	No.	%	No.	%		
Age					0.657	0.720
• < 20	10	10.0%	8	8.0%		
• 20-30	56	56.0%	58	58.0%		
• >30-40	34	34.0%	34	34.0%		
Educational level					0.520	0.914
• Illiteracy	11	11.0%	15	15.0%		
• Read & write	24	24.0%	20	20.0%		
• secondary education	39	39.0%	37	37.0%		
• university	26	26.0%	28	28.0%		
Occupation					0.043	0.835
• Housewife	85	85.0%	87	87.0%		
• Employment	15	35.0%	13	38.0%		
Residence					1.099	0.294
• Rural	70	70.0%	75	75.0%		
• Urban	30	30.0%	25	25.0%		

Table 2: Distribution of pregnant women according to their reproductive history

Reproductive history	Control group N=(100)		Study group N=(100)		χ^2	P Value
	No.	%	No.	%		
Gravida					7.808	0.050
• Primigravida	60	60.0%	28	28.0%		
• Multigravida	40	40.0%	72	72.0%		
Parity					6.708	0.050
• 1-3	20	20.0%	40	40.0%		
• Multipara	20	20.0%	32	32.0%		

Table 3 Distribution of pregnant women according to their practices toward genital hygiene and sexual behaviors

practices toward genital hygiene and sexual behaviors	Control N=(100)		Study N=(100)		χ^2	P Value
	No.	%	No.	%		
Wear underwear					81.303	<0.001
• cotton underwear	81	81.0%	44	44.0%		
• synthetic underwear	19	19.0%	56	56.0%		
Boiling underwear					72.731	<0.001
• yes	70	70.0%	29	29.0%		
• No	30	30.0%	71	71.0%		
Fluid intake per day					76.015	<0.001
• < 6 glasses	15	15.0%	35	35.0%		

practices toward genital hygiene and sexual behaviors	Control N=(100)		Study N=(100)		P Value
	No.	%	No.	%	
Wear underwear					81.303 <0.001
• cotton underwear	81	81.0%	44	44.0%	
• synthetic underwear	19	19.0%	56	56.0%	
• 6-8 glasses	45	45.0%	35	35.0%	
• > 8 glasses	40	40.0%	30	30.0%	
wash hands before use of toilet					84.862 <0.001
• yes	70	70.0%	25	25.0%	
• No	30	30.0%	75	75.0%	
wash hands after use of toilet					85.185 <0.001
• Yes	95	95.0%	70	70.0%	
• No	5	5.0%	30	30.0%	

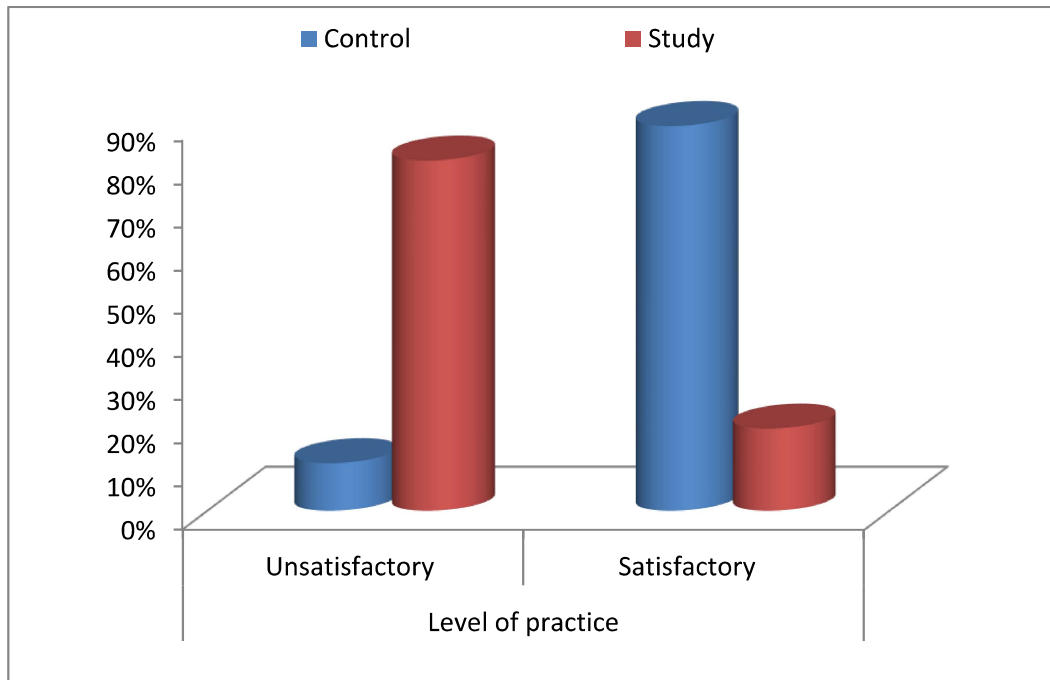


Figure (1): Distribution of the pregnant women according to their level of practice toward genital hygiene and sexual behaviors

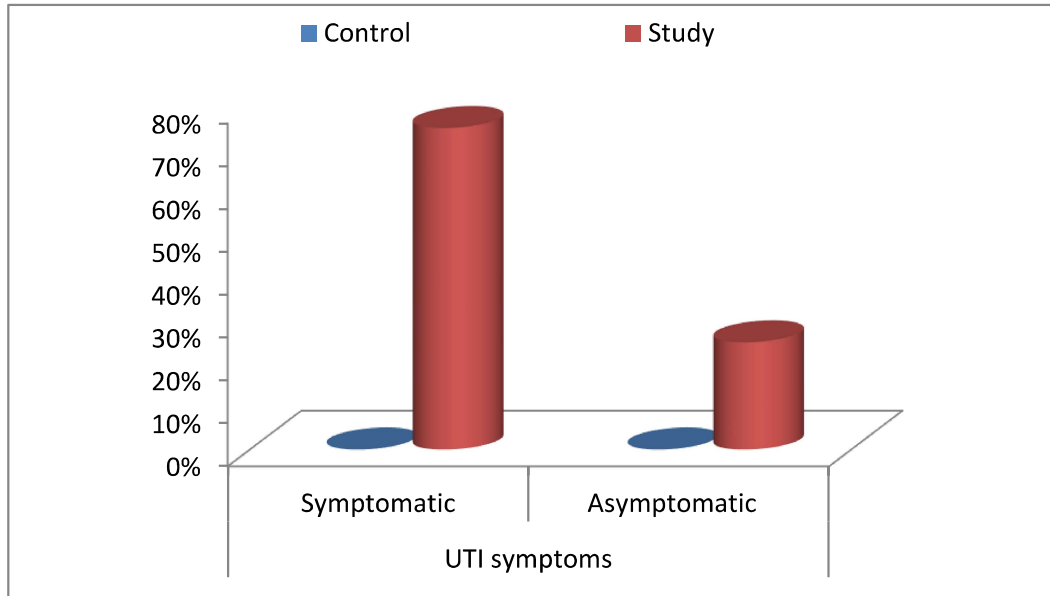


Figure (2): Distribution the pregnant women according to symptoms of UTI

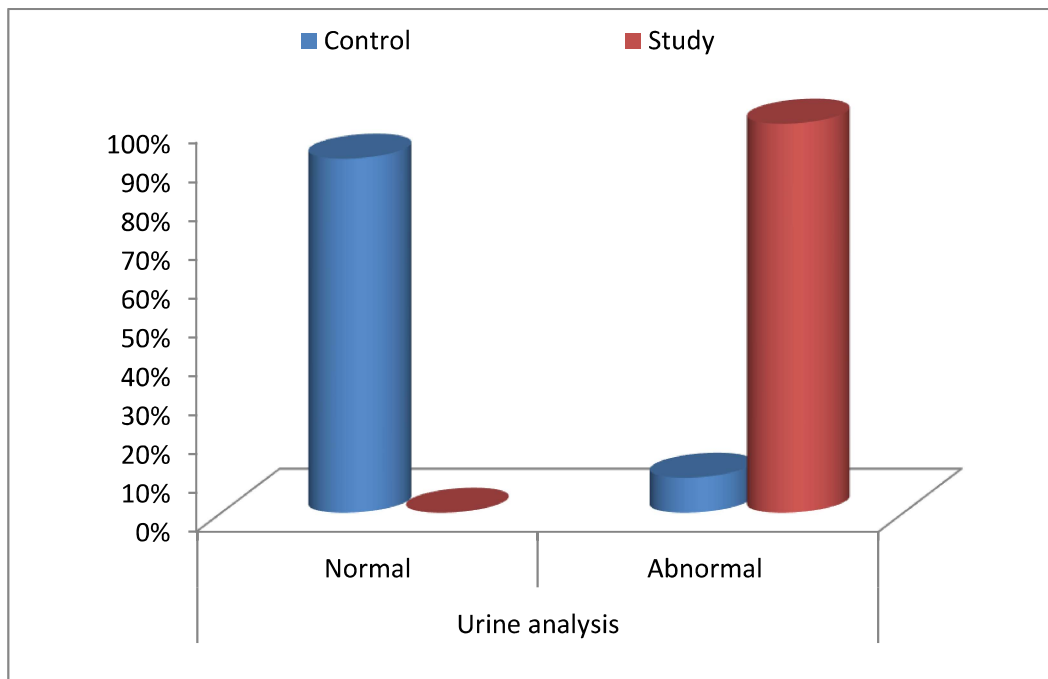


Figure (3): Distribution the pregnant women according to results of urine analysis

Table 4: Relationship between women's practice in study group and UTI

Intensity of UTI	Total No		Level of practice in Study group				P. Value
			Satisfactory		Un satisfactory		
	N	%	N	%	N	%	
Symptomatic	75	75%	7	7%	70	70%	<0.001**
Asymptomatic	25	25%	12	12%	11	11%	

Discussion

UTIs are one of the major common human bacterial infections (**Chu and Lowder, 2018**). Our study showed that around half of the studied women aged between (20-30yrs), this result supported by **Mahmoud et al. (2019)** who added that the mean age of the pregnant women with UTIs was 22.8 ± 6.2 years old. According to educational level, more than one third of women with UTIs had secondary level education. This finding is similar with the study that conducted by **Shaheen et al. (2016)** about the prevalence of UTIs among pregnant women and possible risk factors, who added that more than two-thirds of the pregnant women with UTIs were in the middle educational level. Also agree with the study which was conducted by **Chand et al. (2018)** who observed that more than one third of the pregnant women had secondary education.

According to the occupation, the majority of the women were housewives. This study was in agreement with **Shaheen et al. (2016)**, who revealed that more than half of the pregnant women with UTIs were found among housewives. Also, this result is in consistence with the study that conducted by **Ali and Abdallah (2019)** about the prevalence of UTIs-among pregnant women in Kano, Northern Nigeria, who added that the most of the pregnant women with UTIs were unemployed. As regard the residence, observed that more than two third of the women were living in rural areas, these findings similar with the study which done by **Mahmoud et al. (2019)** who noticed more than two-thirds of pregnant women were living in rural areas. The current results suggested that not working was indicator variable for the incidence of UTIs, these findings disagree with the findings of study done by **Okonko et al. (2010)** about the detection of urinary tract infection (UTI) among pregnant women in Oluyoro Catholic Hospital, Ibadan, South-Western Nigeria, who noticed that more than two-thirds of the pregnant women with UTIs were among civil workers (77.8%), followed by teachers (70%), businesswomen (53.8%). Also, our results different with the study by **Nabbugodi et al. (2015)** about the prevalence of urinary tract infection, microbial etiology, and antibiotic sensitivity pattern among antenatal women presenting with lower abdominal pains at Kenyatta National Hospital, Nairobi, Kenya, who found that there was no statistically significant relation between occupation and UTIs.

This study showed that gravidity is another indicator variable that might affect the incidence of UTIs, in that the incidence was found to be highest in the multigravidas' pregnant women (72%). This finding is in consistence with **Ali et al. (2011)** who did study about the asymptomatic bacteriuria among pregnant

women, who found that multiparous was found to be an important risk factor for UTIs. Also, the present study findings is agreement with **Younis et al. (2019)** who did study about the prevalence of urinary tract infection among pregnant women and its risk factor in Derna City, who found that multigravida was found to be an important risk factor, as 70% of those who had UTIs were multigravida. From the researchers' point of view, this may be related to the physiologic changes in UTIs, which is more likely to occur in women who have pregnancies in rapid progression.

Our study results showed that the symptomatic UTIs represented most of the pregnant women. This study agrees with that of **Parveen et al. (2011)**, who did the study about the prevalence of UTI during pregnancy and added that the prevalence of UTIs was around one third of the women in Dhaka. Moreover, the findings of the current study are supported by **Mohamed et al. (2017)**, who found that 29% of the studied women had UTIs in Ismailia City. But, the findings of the present study are different with **Mohammad (2013)**, who reported the prevalence of UTIs was less than one-third of the studied pregnant women in Suez Governorate. In addition, the findings of the current study are disagreeing with **Ebidor (2015)**, who reported that the prevalence of UTIs in pregnant women was 25.3% in Amassoma, Southern Nigeria.

The present study results showed that asymptomatic UTI (ASB) represented less than one-third of the pregnant women. This study is in agreement with **Tadesse et al. (2014)**, who conducted a study about asymptomatic UTIs among pregnant women attending the antenatal clinic of Hawassa Referral Hospital, who observed that the prevalence of ASB in pregnancy was 18.8% in Ethiopia. Also, the findings of the present study are in agreement with **Elzayat et al. (2017)**, who did study about the prevalence of undiagnosed asymptomatic bacteriuria and associated risk factors during pregnancy, who added that the prevalence rate of ASB during pregnancy at two tertiary centers in Cairo, Egypt, was 10%. Also, these results agree with **Musona-Rukweza et al. (2017)**, who conducted a study about the prevalence of asymptomatic bacteriuria among pregnant women, who found that the prevalence of ASB among pregnant women in Harare, Zimbabwe, was 14.2%.

However, the findings of the current study are consistence with the study done by **Patnaik et al. (2017)**, who conducted a study about the prevalence risk factors and causative organisms of asymptomatic bacteriuria in pregnancy, found that 25.3% of the infected women have no symptoms of UTI in India. These results are also in disagreement with **Ayoyi et al. (2017)**, who did a study about

the prevalence, etiology and antibiotic sensitivity profile of asymptomatic bacteriuria isolates from pregnant women in selected antenatal clinic from Nairobi, Kenya, who added that the prevalence of ASB in pregnancy in Kenya was 21.5%. Differences in results of the previous studies might be related to different sample size, different culture, differences in UTI perception, geographical differences, ethnicity, setting of study (primary care, community based, or hospital), mode of screening (urine dipstick, microscopy, and culture), difference in the environment, and socioeconomic status of the pregnant women.

Regarding women's practices toward genital hygiene and sexual behaviors, z35 results of this study revealed that more than half of the pregnant women with UTIs used synthetic underwear. Wearing synthetic underwear is another indicator variable that could participate to incidence of UTIs. This study finding is agreement with many researchers, such as **Wamalwa et al. (2013)**, **Shaheen et al. (2016)**, **Badran et al.(2015)** and **Mohamed et al. (2017)**, who reported that unsatisfactory women hygiene practices such as using underwear made of material other than cotton had a significant role in developing UTIs during pregnancy. But these findings were different with a study conducted by **Sheikh (2000)**, who did with study about the incidence of urinary tract infection during pregnancy, who noticed that wearing synthetic underwear had no significant effect on the development of UTIs in a study conducted in Pakistan.

The present study added that about one-third of the pregnant women with UTIs were found to have low fluid intake (< 6 glasses daily). This finding is similar with **Badran et al. (2015)** who conducted study about the impact of genital hygiene and sexual activity on UTI during pregnancy, who observed that low intake of fluids was statistically significantly associated with UTIs. This may be related to increase fluid intake, has more theoretical methods for eliminate the risk of UTIs, ranging from diuresis acting to diluting the concentration of uropathogens, also reducing the potential for clinical infection from the urinary tract, therefore, decreased fluid intake is considered another indicator variable that might affect the incidence of UTIs. On the other hand, our results are different with **Beetz (2003)** who conducted a study about the risk factor of urinary tract infection, who revealed in his study titled 'mild dehydration: a risk factor of UTI?' that there is no definitive evidence that the susceptibility for UTI is affected by fluid intake. These variations could be construed by differences in geographical location.

In the present study, there was highly statistically significant difference between the study and control groups according to their level of practices toward

genital hygiene and sexual behaviors, the majority of the women with UTIs had unsatisfactory practice toward genital hygiene and sexual behaviors. But in the control group the majority of women without UTIs had satisfactory practice toward genital hygiene and sexual behaviors, this result consistence with **Badran et al. (2015)** who concluded that was Highly statistically significant difference between the study and control groups according to level of practices toward genital hygiene and sexual behaviors.

Conclusions

The prevalence of UTIs was higher among pregnant women who had secondary education, housewives, multigravida, women had unsatisfactory practices toward genital hygiene, sexual behaviors and those who drank less than 6 glasses per day.

Recommendations

1. Further studies are important to discuss the effect of health education program on eliminating symptoms and decrease recurrence of UTIs among pregnant women.
2. Further studies are important to examine the prevalence of UTIs among different Egyptian governments during pregnancy.
3. Health education about genital hygiene and sexual habits should be emphasized by antenatal care providers to all pregnant mothers.
4. Routine urine analysis tests should be conducted for all pregnant women every visit.

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الملخص العربي

العلاقة بين نظافة الجهاز التناسلي و الممارسات أثناء العلاقة الجنسية مع عدوى الجهاز البولي بين السيدات الحوامل

المقدمة: تعتبر عدوى الجهاز البولي أثناء الحمل واحدة من أهم المشاكل الصحية أثناء الحمل على مستوى العالم و خاصة في الدول النامية و التي تتسبب في مضاعفات للأم و الطفل.

الهدف: استهدفت هذه الدراسة معرفة مدى العلاقة بين الممارسات الخاصة بنظافة الجهاز التناسلي و الممارسات أثناء العلاقة الجنسية مع عدوى الجهاز البولي بين السيدات الحوامل.

منهج البحث: أجريت الدراسة في العيادات الخارجية لقسم أمراض النساء و التوليد بمستشفى جامعة جنوب الوادي و مستشفى سوهاج العام. أشتملت عينة الدراسة على إجمالي عدد ٠٠٢ من النساء بعد تلقي موافقتهن الكتابية للمشاركة (مجموعة الدراسة ٠٠١ من السيدات الحوامل اللاتي يعانين من عدوى الجهاز البولي و المجموعة الضابطة ٠٠١ من السيدات الحوامل الأصحاء اللاتي لايعانين من عدوى الجهاز البولي).

النتائج: أظهرت أنه يوجد اختلاف حقيقي بين المجموعتين. (٥٧%) من السيدات الحوامل اللاتي يعانين من عدوى الجهاز البولي كان لديهن أعراض و (١٨%) منهم يقمن بممارسات غير مرغوب فيها تجاه نظافة الجهاز التناسلي و الممارسات الخاطئة أثناء العلاقة الجنسية.

الخلاصة: أوضحت الدراسة أن معدل العدوى في السيدات الحوامل اللاتي يعانين من عدوى الجهاز البولي أعلي في السيدات اللاتي مستوى تعليمهن أقل و الأئى يرتدين ملابس داخلية مصنعة من ألياف صناعية و يشربن كمية سوائل أقل من ٦ أكواب على مدار اليوم.

التوصيات: كما أوصت الدراسة على نصح السيدات الحوامل على الممارسات السليمة تجاه نظافة الجهاز التناسلي واتباع الممارسات الصحيحة أثناء العلاقة الجنسية.