Effect of intervention Guidelines on self care practices of pregnant women with urinary tract infection

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Abstract: Pregnancy and urinary tract infections UTIs often go hand in hand since pregnant women are at an increased risk of developing UTIs. Pregnancy hormones cause changes in the urinary tract which predispose women to infections. In addition, as the uterus grows it presses on the bladder and can prevent complete emptying of urine. This stagnant urine is a likely source of infection. Untreated these infection may lead to kidney infection. Urinary tract infections in pregnant women should be treated with appropriate therapy together with healthy life style activities (self care practices) in order to prevent complications such as premature labor. **Design:** A Quasi-experimental study design was used. **Aim:** To determine the effect of intervention guidelines on self care practices of pregnant women with urinary tract infection **Setting:** The study was conducted in the antenatal clinic at Tanta University Hospital and El Menshawy Hospital. In addition, two MCH centers affiliated to different available geographic health zones (medical centers at Said and sager). **Sample:** A total number of 42 pregnant women diagnosed with urinary tract infection and who were fulfilled the inclusion criteria. **Tools:** 1-Structured interview schedule to assess socio demographic characteristics, reproductive history, 2- Collected data related to UTI symptoms and the followed self care practices (Self –Care Assessment Structured Interviewing Schedule (SCASIS) was used, 3- Women knowledge regarding urinary tract infection, 4- Specific affect of self care practices,5– And, The developed intervention guidelines on self care practices regarding urinary tract infection**. Results**: Women showed mean scores of pre-intervention deficient, incorrect knowledge, and unsatisfactory self care practices regarding their urinary tract infection symptoms. Statistically significant improvements in the total scores were found at the post-test and 3 months later compared with pre-intervention scores (p<0.001). Furthermore there were obvious improvement and relieving of UTI symptoms as reported by women after the implementation of intervention guidelines. **Conclusion and Recommendation:** The findings of the present study enlighten some important aspects regarding women knowledge and self care practices toward urinary tract infection during pregnancy. **Therefore the study recommended** increase awareness of pregnant women regarding physiological changes of pregnancy- Increase awareness of women self care needs, requests, facilitate and increase the self care abilities of the woman to perform self care activities- provides the woman with sufficient knowledge to recognize the signs and symptoms of urinary tract infection to facilitate early detection and prevention of future infection.
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Key words: Self care practice; urinary tract infection; pregnancy.

1. Introduction

Urinary tract infections UTIs are common during pregnancy; the most common causative organism is *Escherichia coli*. Pregnant women are at increased risk for UTIs, beginning in week 6 and peaking during weeks 22 to 24. Approximately 90 percent of pregnant women develop ureteral dilatation, which will remain until delivery (hydronephrosis of pregnancy). Increased bladder volume and decreased bladder tone, along with decreased ureteral tone, contribute to increased urinary stasis and ureterovesical reflux. Additionally, the physiologic increase in plasma volume during pregnancy decreases urine concentration. Up to 70 percent of pregnant women develop glycosuria, which encourages bacterial growth in the urine. Increases in urinary progestins and estrogens may lead to a decreased ability of the lower urinary tract to resist invading bacteria. This decreased ability may be caused by decreased ureteral tone or possibly by allowing some strains of bacteria to selectively grow. These factors may all contribute to the development of UTIs during pregnancy. (1-4)

Urinary tract infections UTIs in pregnant women should be treated to prevent complications such as premature labor. Asymptomatic bacteriuria can lead to the development of cystitis or pyelonephritis. Pyelonephritis can be a life-threatening illness, with increased risk of perinatal and neonatal morbidity. Recurrent infections are common during pregnancy and require prophylactic treatment. Hence, preterm delivery is frequent. Evidence suggests that infection plays a role in the pathogenesis of preterm labour. Ascending lower genital tract infections are the most probable cause of preterm delivery, but this remains to be proved. Moreover, asymptomatic bacteriuria is associated with an increased risk of intra-uterine growth retardation and low-birth-weight infants. Many studies have found that the presence of UTI was associated with premature labor (labor onset before 37 weeks of gestation), hypertensive disorders of

pregnancy (such as pregnancy-induced hypertension and preeclampsia), anemia (hematocrit level less than 30 percent) and amnionitis. Neonatal outcomes that are associated with UTI include sepsis and pneumonia (specifically, group B streptococcus infection). UTI increases the risk of low-birth-weight infants (weight less than 2,500 g [5 lb, 8 oz]), and prematurity (less than 37 weeks of gestation at delivery). Hence, UTIs during pregnancy are a common cause of serious maternal and perinatal morbidity; with appropriate screening and treatment, this morbidity can be limited. (2,3,5)

The woman usually reports burning and pain on urination. She reports urgency and frequency and voids only small amounts at a time. The woman usually 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 and falls abruptly. Often she has shaking chills and reports nausea and vomiting. Flank pain and tenderness are common. Signs of urinary tract infections also include foul-smelling urine that appears cloudy.(6,7)

During pregnancy, urinary tract infections UTIs are more common in women who are older, of higher parity, of lower socioeconomic status, have a past history of UTI, have an anatomical or functional urinary tract abnormality, and/or have the sickle cell trait or diabetes. Screen all pregnant women for bacteriuria at early prenatal care and again at 28 weeks gestation treat as indicted. Some patients who suffer from recurring UTIs during pregnancy may be placed on a low-dose course of antibiotics to prevent re-infection. Urinary tract infections usually respond quickly to treatment but follow-up clinical evaluation and cultures are important. Women who want to prevent or reduce a urinary tract infection, especially during the prime time of infection between the 6th and 24th week of gestation, can make some simple lifestyle changes (self care practices) such as: Good hygiene, drink 6-8 glasses of water each day, develop a habit of urinating, empty bladder completely and other simple self-help methods are critical for maintaining optimal urinary health.(3,5,8,9)

Significance of the study:

Self-care is the practice of activities that individuals personally initiate and perform on their own behalf in maintaining life health and well-being. Alternatively, self-care has referred to an adult's personal contribution to own health and wellbeing. Pregnant women should learn how to manage their pregnancy period and cope with its changes. Studies report that 80 to 95 percent of all health problems are managed at home through self -care and that most people who consult a physician have tried treating themselves before seeking medical advice. The seriousness of the health problem and the extent and type of disability, including its effect on daily activities, are the best determinants of whether an individual uses self-care practices or seeks help from a professional. If the woman does not apply self- care measures correctly, it may lead to negative effects on urinary tract infection during pregnant period such as ascending infection and inflammation.(10)

The nurse is to meet the self care needs, requests and facilitate and increase the self care abilities of the patient to perform self care activities. A new approach to women's health includes health promotion and health protection throughout life span. Women's care now receives total assessment, planning, treatment, education, counseling and support from nurse. Nurse promotes comfort, ensures adequate hydration, provides patient teaching and provides the women with knowledge in order to recognize the signs and symptoms of urinary tract infection to facilitate early detection and treatment of future infection.

Aim of the study:

To determine the effect of intervention guidelines on self care practices of pregnant women with urinary tract infection.

Research Hypothesis:

Pregnant women were expected to exhibit an improvement on their urinary tract infection symptoms through their daily living performance of healthy and effective self care practices during pregnancy after implementation of the intervention guidelines.

2. Subject and Methods

Research design: A quasi-experimental study design was used.

Setting of the study: The study was conducted in the antenatal clinic at Tanta University Hospital and El Menshawy Hospital. In addition, two MCH centers affiliated to different available geographic health zones (medical centers at Said and sager).

Sample: A convenient sample of 42 pregnant women diagnosed with urinary tract infection attended the above mentioned settings.

Criteria of the Sample

All pregnant women who were actually diagnosed with urinary tract infection, duration of pregnancy was at 1st and early 2nd trimester (1-4 months).In addition, women with a normal course of pregnancy, and also those who were free from medical and obstetrical complications

Tool of data collection

The tools used in data collection were as follows:

Tool 1: **Women knowledge structured interview schedule:**

The interview schedule was developed to collect the data concerning pregnant urinary tract infection and self care; it was in the form of open and close ended questions, which consists of the following parts:

Part (a): Socio-demographic characteristics of the sample which includes: age, level of education, residence, occupation, and perceived income.

- **Reproductive History:** Parity, abortions, number of living children, presence of prolapsed uterus, previous use of contraceptive method, attending or not antenatal visits and previous history of UTI with previous pregnancies.

Part (b): - It was developed by the researcher to collect data related to UTI symptoms and the followed self care practices, it include two main sections:

-Section 1: **Assessment of women current UTI symptoms** (here the pregnant women have mentioned more than one symptom): their frequency, how women deal with them, how they bother them, whether the woman seeks medical care or not and whether she follows self care practices or ignore them.

-Section 2: Self –Care Assessment Structured Interviewing Schedule (SCASIS): It was developed by the researcher to collect data related to women's reported self care practices including their personal daily habits as measures taken by women's to relieve their urinary tract infection symptoms.: It was entails questions related to:

- Experience of the self care practice: In the form of absence and presence of self care practice, types of practices, frequency of performing them, and sources of information about these practices.

- Specific Cognition of the self care practice of which the women perceived benefits (whether herself care practice beneficial or not), and also barriers of performing such practices.

Part (c): This part covers women Knowledge regarding urinary tract infection (Definition, causes, symptoms, risk factors, problems arises with UTI, effect of UTI on mother and baby and what self care practices used to prevent,manage and /or relieve UTI).

Scoring system:

Scoring system for knowledge was determined through: (2) score for correct answers, (1) score for incorrect answers and don't know.

The total score level were graded as (Weak <50%, Average 50 < 70 %, Good 70-100%).

-Developed Intervention Guidelines:

These guidelines were prepared by the researcher based on review of pertinent literature. It was meant to be used to help pregnant women know, understand and perform healthy self care practices in their daily life to relieve their urinary tract infection symptoms during pregnancy. The intervention guidelines covered theoretical and practical sections such as physiological changes during pregnancy, the importance of antenatal care, warning signs during pregnancy, definition, causes, risk factors of UTI, clinical manifestations, adverse effect of UTI on pregnancy & fetus. In addition, management and preventive measures to relieve women UTI symptoms and also hygienic care of the genital tract (the healthy behavior or healthy self care practices): (Develop a habit of urinating as soon as the need is felt and empty bladder completely when you urinate. Urinate before and after intercourse Avoid intercourse while you are being treated for an UTI., after urinating blot dry (do not rub), and keep your genital area clean. Make sure that you wipe from the front toward the back, avoid using strong soaps, douches, antiseptic creams, feminine hygiene sprays, and powders. Change underwear and pantyhose every day; avoid wearing tight-fitting pants. Wear all cotton or cotton-crotch underwear and pantyhose; don't soak in the bathtub longer than 30 minutes or more than twice a day, drink 6-8 glasses of water each day and unsweetened cranberry juice regularly, and eliminate refined foods, fruit juices, caffeine, alcohol, and sugar).

Part (d): Effect of women self care practices on relieve of their UTI symptoms and women health three months later in the form of (completely relieved, moderately relieved, and not relieved).This part was evaluated by using designed Interviewing schedule.

Tool II: Self Care Practices ' Specific Affect:

Modified version of self-efficacy scale adapted from Ralf Schwarzer's (1991) to measure the women perceived self – efficacy in performing their self care practices. It contains 5 items: 2 negative, 1 indifferent, and 2 positive. For each item the woman has to choose between 3 alternatives: 3 certain, 2 not sure, 1 uncertain.The scores are reversed for the negative items. The total score ranged from 5-15 where: <8 suggest low self – efficacy, 8-<13 suggests average self – efficacy, and >13 suggests high self efficacy.**Data Collection**

After an extensive review of recent relevant literature using books, articles and scientific magazines was done by researcher to be acquainted with the problem and guided in the process of tools designing. The tools were tested for content validity by a jury of 3 experts in the field. Its reliability was tested by test retest technique.

Pilot study:

Pilot study was carried out before starting the data collection. The pilot study was carried out 3 day /week among four pregnant women with UTI symptoms attending in the antenatal clinic at of the previously mentioned settings. This was done to evaluate the applicability and clarity of tools. Then the necessary modifications were done.

Procedure:

This study has been carried out on the entire study sample that has been diagnosed with urinary tract infections attended in the ante natal clinic at the previously mentioned settings. The data were collected over a period of six months, three days per week. Each woman was interviewed individually by the researcher

in the antenatal clinic at of the previously mentioned settings.

-The data obtained during assessment phase constituted the baseline data to assess women current UTI symptoms, their followed self care practices and also their knowledge regarding UTI used (tools 1,11) in order to determine the gaps and needs of women through an interview ranged from 20 - 25 minutes.

- Based on the results obtained from assessment phase, teaching sessions were developed according to the needs of women, constructed to satisfy women' deficit knowledge and to evaluate their self care practices.

-Implementation of teaching sessions (intervention guidelines) were implemented for six groups each group constituted seven women for a period of four weeks period. Five sessions, each session ranged from one to two hours. The content of the sessions covered the physiological changes during pregnancy,importance of antenatal care,warning signs during antenatal period,definition or meaning of UTI,causes,signs and symptoms, risk factors of UTI, problems associated with UTI (affect on quality of life),complications of UTI, and preventive and managing self care measures or practices (health care behavior) regarding UTI symptoms as well as their point of view regarding the general concept of self are practices.

Different methods of teaching were used such as lecture, group discussion, demonstration and re-demonstration. Instructional media also was included.

-The effect of the intervention was assessed immediately (two weeks) after the implementation of the teaching sessions to constitute the post-test, and three months later during pregnancy as a follow-up assessment using the same tools (tool 1 parts (c,d) to evaluate the effect of implemented instructional guidelines on women self care practices on the relieve of their UTI symptoms and women health three months later.

Ethical consideration:

The necessary official permission and approvals for data collection were obtained by submission the official letters containing the title and aim of the study to the directors of the previously mentioned settings. All women rights were maintained (informed consent) and informed by the purpose of the study, also privacy and confidentiality were ensured.

Statistical Analysis:

Data collected were organized, categorized, analyzed and results were presented in tables; the following statistical measures were used. Descriptive measures include (number percentage - Means, standard deviation – f test & p value - Correlation coefficient (r) test.)

3. Results:

Table (1): Percent distribution of pregnant women according to socio – demographic characteristics n=42.

Socio – demographic characteristic.	No.	%
Age		
>20	4	9.52
20->30 years	21	50.00
30->40 years	12	28.57
<40	5	11.90
Range	18-42	
Mean ± SD	29.8±9.89	
Occupation		
Working	13	30.95
Not Working	29	69.05
Educational level		
Illiterate or just read & write	11	26.19
Secondary School or its equivalents	24	57.14
University	7	16.67
Residence		
Rural	30	71.43
Urban	12	28.57
Perceived income		
Enough	16	38.10
Not enough	26	61.90

Table 2: Precent Distribution of pregnant women according to their reproductive history: n=42

Women Reproductive History	no	%
Parity:		
Primipara	10	23.81
2-3	21	50.00
4-	8	19.05
<4	3	7.14
Range	1-6	
Mean ± SD	2.68±0.98	
Abortions:		
None	32	76.19
1	6	14.29
2-3	3	7.14
4	1	2.38
> 4	-	-
Living children		
1-4	25	59.52
<4	17	40.48
Time of initial visit		
1st month	-	-
2nd month	3	7.15
3rd month	26	61.90
4th, month	13	30.95
Attending antenatal classes		
Yes	7	16.67
No	35	83.33
Type of previous delivery		
C.S	10	23.81
Normal	23	54.76
Assisted delivery	9	21.43
Previous history of UTI with previous pregnancies		
Yes	5	16.67
no	37	88.09
Previous Use of contraception		
Yes	14	33.33
No	28	66.67
If yes:		
Hormonal	4	9.52
IUD	8	19.05
Others	2	4.76
Previous history of Uterine prolapsed		
Yes	6	14.29
No	36	85.71

Table (1) reveals that half (50%) of the sample were from 20->30 years old with mean age 29.8±9.89, and about (69.05%)are housewives. The table also shows that about (57.14%) of pregnant women were at secondary school or its equivalents, about (71.43%) of women were from rural areas, and (61.9%) their monthly income is not enough.

Table(2) shows that half (50%)of the sample had 2-3 deliveries, while (23.81%) were primipara. However their mean age of parity 2.68±0.98, also about (54.76%). had previous normal delivery and (23.81%) of them had CS. Moreover, about three quarters (76.19) of pregnant women didn't have abortion before, also (59.52%) had from 1-4 living children. Furthermore, about (61.90%) had their initial visit at the third month of pregnancy, while about (30.95%) had it at the fourth month, while the majority of women (83.33%) didn't attend any antenatal classes. The table also illustrates that the majority of the women (88.09 %), and (85.71 %) had no previous history or UTI and uterine prolapsed respectively.

Table (3): Percent distribution of signs and symptoms of UTI as reported by pregnant women.

Signs & symptoms of UTI	n.	%
• Pain during urination	39	92.86
• Pain during sexual intercourse	30	71.43
• Feeling of urgency when urinate	37	88.10
• Change of urine color and/ or odor,urine that looks cloudy, smells foul or unusually strong and change in amount of urine, either more or less	17	40.48
• Burning sensation during urination	40	95.24
-Incontinence, the need to urinate more often than usual. Waking up from sleep to urinate	28	66.67
-Pain and cramps in lower abdominal (Supra pubic area) Pain, pressure, or tenderness in the area of the bladder	34	80.95
• Sensation of Itching	18	42.86
• Fever-chill, sweats,nausea & vomiting	15	35.71
• Fatigue	23	54.76
• Vaginal secretions	25	59.52
• Foot edema	11	26.19
• Right side pain	12	28.57
• Light side pain	14	33.33

All items are not mutually exclusive

Table (3) continue:

-Frequency of current UTI symptoms:		
-Once from the beginning of pregnancy	4	9.52
-Recurrent	26	61.90
-Continuous from the beginning of infection	12	28.57
Symptoms bothered you:		
-Yes	37	88.10
-No	5	11.90
How it bother you?**		
-Burning sensation	39	92.86
-Lower abdominal discomfort	32	76.19
-Disturb my sleep	27	64.29
-Interfere with my daily life activities	25	59.52
-Make me nervous	18	42.86
Seek medical advice:		
-Yes	9	21.43
-No	33	78.57
Causes **		
-Believe it will not affect pregnancy	27	64.29
-Believe it will not affect baby	28	66.67
-It is physiological with pregnancy	16	38.10
-Fear of obstetrical examination which may result in abortion or preterm labor	18	42.86
-Seek medical advice only when the status considered high risk	30	83.33
How did you deal with them?:		
- Often ignore them	7	16.67
- Perform self care practice	35	83.33
Reason of Attendance:		
-Seeking medical advice to treat symptoms	9	21.43
-Just for Follow up visits only	18	42.86
- Didn't come(no attendance)	15	35.71

** Items are not mutually exclusive

Table (3) displays signs and symptoms of UTI as reported by pregnant women such as: Pain during urination (92.86%), feeling of urgency when urinate (88.10%), pain and cramps in lower abdominal (supra pubic area) (80.95%),and burning sensation during urination (95.24%). Moreover, it is found that the reported symptoms of women were recurrent by (61.90%) and continuous from the beginning of pregnancy by (28.57%),again about (78.57%) didn't seek medical advice, only (21.43 %) of women who

had seek medical advises.At the same time, table 3 shows that the majority of pregnant women(83.33%) perform self care measures to relieve their symptoms.

Table 4 illustrates that the majority of pregnant women reported that they performed self care measures to relieve their UTI symptoms before the intervention such as change clothes (underwear) by (69.05 %), cold compression on bladder by (73.81%), vulval and vaginal washing with watermelon by (76.19%) and frequent drink coffee & tea by (78.57%) of them respectively. It is also reported sitz bath in water with chamomile by (71.43) sitz bath in salt water by (76.19 %), application of lemon juice to urethra and pernial area by (61.90 %), and about (59.52 %) of women have taken self prescribed medications. The table also reveals that about (73.8) of pregnant women performed these self care practices every 2-3 days, slightly less than half of them (47.62%) perceived these practices as so beneficial. Meanwhile about (30.95%) and (28.57%) of women perceived that lack of time and fear of abortion and/ or preterm labor were barriers of performing self care practices.

Table (5) clears up that there is significant improvement of the pregnant women knowledge regarding most of the studied items in relation to pregnancy and urinary tract infection before & immediately after the implementation of the interventions and 3 months later $p<0.001$.

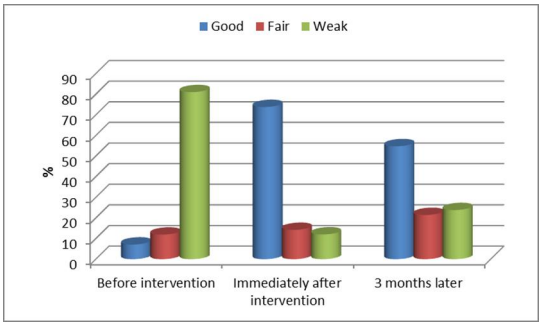

Figure 1: Total score level of knowledge of pregnant women regarding urinary tract infection before & immediately after the implementation of the interventions and 3 months later.

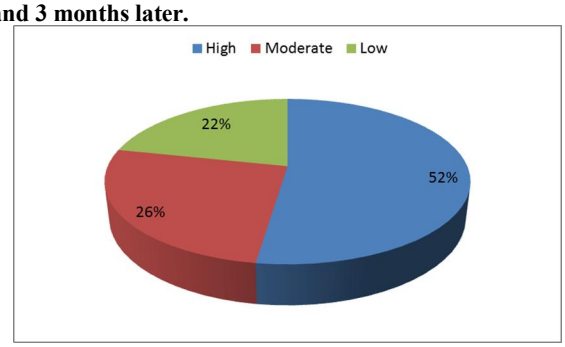

Figure 2: Percent distribution of pregnant women according to their perceived self efficacy in performing self care practices.

High efficacy =52.3 % Moderate efficacy = 26.1% Low efficacy = 21.6 %

Table (4): Percent Distribution of pregnant women according to their self care practices of UTI symptoms (voiding changes) as reported by pregnant women before the intervention.

Women reported Self care practices to relieve their UTI symptoms before the intervention.	n	%
- Do Nothing	7	16.67
-Use gel for pain in intercourse	21	50.00
-Massage in a abdomen	19	45.24
-Use anti septic solution in water For perineal care	25	59.52
-Change clothes (underwear)	29	69.05
-Cold compression on bladder	31	73.81
-Vulval and vaginal washing with watermelon	32	76.19
Personal daily habits		
- Frequent drink coffee & tea	33	78.57
-Drink home remedies	21	50.00
-Drink warm fluid	18	42.86
-Eating spicy or heavy food	27	64.29
Practicing exercises		
-Yes	14	33.33
-no	28	66.67
-Intake of self prescribed medications	25	59.52
-Sitz bath in salt water	32	76.19
-Application of lemon juice to urethra and perneal area	26	61.90
-Vulval and vaginal douching by warm water with aspirin	21	50.00
-Sitz bath in water with chamomile	30	71.43
-Sitz bath in tea	11	26.19
-Sitz bath in cornflower in dissolved water	13	30.95
-Application of spermicidal creams & suppositories	9	21.43
-Increase periods of rest	12	28.57
All items of practices are not mutually exclusive		
Frequency of performance:		
-Every 2-3 days	31	73.81
-One time a day	9	21.43
- 2-3 times per day	2	4.76

Source of knowledge **:		
-Not definite	21	50.00
-Family member	25	59.52
-Friends/ neighbor	14	33.33
-Female pharmacist	13	30.95
Perceived benefits of the practice:		
- Very effective	20	47.62
- Relatively effective	13	30.95
- Not effective	9	21.43
Perceived barriers of performing the practice:		
- None	17	40.48
- Lack of time	13	30.95
Wrong and /or traditional believes (fear about pregnancy,fear of abortion, preterm labor)	12	28.57
Women reported Self care practices to relieve their UTI symptoms before the intervention.	n	%

*** Items are not mutually exclusive*

Table 5: Mean scores of women knowledge before & immediately after the implementation of the interventions and 3 months later as regards items related to pregnancy and urinary tract infection

Knowledge Ites	Women Knowledge score (mean ± SD:)				
	Before interventions	After interventions	3 months later	F	P
Physiological adaptations during pregnancy (Reproductive &Other body systems) 12	6.2±2.01	10.23±1.03	8.98±1.62	6.98	0.001*
Importance of antenatal care 7	3.11±1.85	6.05±0.98	5.11±0.92	7.11	0.001*
Warning signs during antenatal period 10	4.01±1.68	8.98±1.06	7.05±1.25	5.98	0.023*
Definition or meaning of UTI 2	0.36±0.68	1.62±0.12	1.60±0.14	4.65	0.031*
Causes of UTI 5	1.25±1.07	4.52±0.42	3.22±1.05	4.98	0.029*
Signs and symptoms of UTI 12	5.61±2.07	11.02±0.74	9.58±2.07	6.58	0.001*
Risk factors of UTI 7	2.69±1.85	6.01±0.75	5.41±1.16	7.26	0.001*
Problems associated with UTI (affect quality of life) 5	1.25±1.07	4.00±0.85	3.1±1.52	5.68	0.02*
Complications of UTI Adverse Effect on pregnancy 7	2.11±1.98	5.98±1.01	4.1±1.68	6.58	0.001*
Adverse Effect on baby 8	3.04±1.65	6.25±1.11	4.98±2.07	5.22	0.021*
Preventive and managing self care measures (health care behavior) regarding UTI symptoms 13	6.52±2.32	11.8±1.07	10.1±2.65	6.85	0.001*

Table (6): Percent distribution of pregnant women's according to the effect of self care on relieving their UTI symptoms 3 months after intervention as reported.

Item	Pregnant women's UTI symptoms 3 months post intervention						test	p
	Relieved		Moderately relieved		Not relieved			
	n	%	n	%	n	%		
Fever n= 15	9	60.0	4	26.7	2	13.3	12.2	0.001*
Lower abdominal pain (Pain super pubic) n=34	16	47.1	11	32.4	7	20.6	5.65	0.021*
pain in urination (dysuria) n=39	21	53.8	13	33.3	5	12.8	13.6	0.001*
burning sensation of urination n=40	18	42.9	14	33.3	8	19.0	10.2	0.001*
Urgency n=37	23	62.2	8	21.6	6	16.2	18.65	0.001*
Incontinence n= 28	14	50.0	8	28.6	6	21.4	8.98	
Dysparunia n=30	19	63.3	9	30.0	2	6.7	17.5	0.001*
Itching sensation n= 18	11	61.1	3	16.7	4	22.2	6.98	0.001*
Fatigue n=23	12	52.2	9	39.1	2	8.7	13.65	0.001*
Urine color change n=17	8	47.1	6	35.3	3	17.6	14.52	0.001*
Vaginal discharge n= 25	11	44.0	7	28.0	7	28.0	10.2	0.001*
Right or left side pain n=14	6	42.9	4	28.6	4	28.6	6.35	0.002*

** All items are not mutually exclusive*

Table 6 shows that more than half of the pregnant women (63.3%), (62.2%), (61.1%), (60.0%), their UTI symptoms had been relieved completely 3 months after intervention such as dysparunia,urgency, itching sensation, and fever respectively. On the other hand,about (39.1%), (35.3%),and (33.3 %) of the pregnant women their UTI symptoms had been moderately relieved 3 months after intervention such as fatigue, urine color change, pain in urination (dysuria), burning sensation of urination and Lower abdominal pain (super pubic Pain) respectively. Meanwhile, the table also shows that about (28.6%),(28%) and (22.2 %)of the pregnant women their UTI symptoms were not relieved such as right or left side pain, vaginal discharge,and also itching sensation respectively.

4. Discussion

One of the very common health conditions that afflict many women in their reproductive years is

Urinary Tract Infection or UTI. Urinary Tract Infection as such is not serious; it can be so in pregnant women. There is an increased risk of kidney infection, pyelonephritis in pregnant women with UTI, this is a far serious condition, and if neglected or untreated, can even lead to kidney failure. The incidence of infection of the kidney increases in the third trimester of pregnancy. An infection during pregnancy may result in complications such as premature birth, low birth weight or even death of the fetus. Therefore, a regular urine analysis is recommended during pregnancy to eliminate the risk of urinary infection [2-4]

Pregnancy and urinary tract infections often go hand in hand since pregnant women are at an increased risk of developing urinary Tract Infection (UTIs). The most common cause of UTI is a bacterium called *Esherichia coli* or better known as *E.coli*, which resides in the colon. Pregnancy hormones cause changes in the urinary tract which predispose women to infections. In addition, as the uterus grows it presses on the bladder and can prevent complete emptying of urine. This stagnant urine is a likely source of infection.[5]

The maternal and neonatal complications of UTI during pregnancy can be devastating. Thirty percent of patients with untreated asymptomatic bacteriuria develop symptomatic cystitis and up to 50 percent develop pyelonephritis. Asymptomatic bacteriuria is also associated with intrauterine growth retardation and low-birth-weight infants. All pregnant women should be screened for bacteriuria and acute cystitis and pyelonephritis should be aggressively treated with appropriate therapy together with healthy life style activities.[5,6]

Self care is the development and use of personal health practices and coping skills for promoting their own health, preventing or limiting disease, and maintains wellbeing. These activities are usually undertaken without professional assistance.However; in spite of its great importance of self care practices for health maintenance it may be harmful if it is based on wrong knowledge or harmful attitudes. [7-9]

In this context, the aim of this study is to determine the effect of intervention guidelines on self care practices of pregnant women with urinary tract infection.

The present study revealed that the mean age of the study sample was 29.8±9.89, where about half of women their age ranged between 20-30 years. This result is consistent with a study conducted by ***(Millar LK,et al 1997)*** who reported that the higher percentage of pregnant women with urinary tract infection (54, 5%) were found within the group age 20-29 years**.** This result is also supported by ***(Kodikara H, et al 2009)*** who reported that women diagnosed with urinary tract infection, (60%) belonged to age group of 20-30 years. On the contrary, ***(Gilstrap LC, 2001)*** reported that the women diagnosed with urinary tract infection (40%) were between 31-40 years**.** Moreover, ***(Widmer M,et al.(2011)*** reported that urinary tract infections are more common in older women and lower socioeconomic status**,**while ***(Mathai E et al., 2004)*** reported that the higher percentage of pregnant women (77.8%) with urinary tract infection were found within the age group of 36-40 years**.**. *This may be related to* multiparty and physiological changes during pregnancy. The findings of the present study also revealed that the majority of women were housewives with secondary school education lived at rural areas. This result agrees with ***(Wing DA et al., (1995)*** reported that the incidence of urinary tract infection increases among the Illiterate and low socioeconomic. Moreover ***(Dimetry et al., (2007)*** reported that low educational level and illiterates were significantly associated with urinary tract infection. ***(Vazquez JC et al.(2011);& (Widmer M et al. (2011)*** suggested that high incidence of UTI may also be attributed to such factors as poor housing, poor drainage systems, lack of proper personal and environmental hygiene, genuine population susceptibility and such factors of lower socioeconomic status.

The study revealed that a vast majority of women were multipara of 2-3 deliveries, started their initial visit at the end of the first or the beginning of the second trimester, and few of them had previous history of UTI with previous pregnancies. This finding is in line with ***(Duarte G, et al.,(2008)*** who reported that the past reproductive history of UTI and multiparty were found to be risk factors for UTI in these women**,** and ***(Thurman AR et al., (2006)*** also reported significant relation between UTIs and ≥4 gravida. Furthermore, ***(Rouse DJ, et al., 1995)*** reported that the urinary tract infections are more common in women of higher parity due to sexual activity. Multiparty are at high risk of urinary tract infection due to trauma to the pelvic floor during labor or weakening of the supportive structures. This is in accordance with ***(Gilstrap LC, 2001)***who reported that women in their 2nd and 3rd trimester had a greater number of urinary tract infection (41.4%) and (55.1%) respectively. Also ***(Wing DA, et al.,(2008)*** reported the occurrence of UTI in about 90% of pregnant women during the third trimester

Regarding the signs and symptoms of urinary Tract Infection UTI as diagnosed and reported by the pregnant women, most of the study sample reported burning sensation and pain during urination, dysparonia,urgency and pain in lower abdominal (supra pubic area),incontinence, change of color and odor of urine (cloudy, dark, bloody, or unusual-

smelling urine),and also a quite percentage of pregnant women reported vaginal discharge. Those women had these symptoms recurrent or continuous from the beginning of pregnancy. The pregnant women stated that these symptoms bothered them with feeling of burning sensation, disturb their sleep, and affect quality of life**.** These results are in agreement with ***(Sun Y,et al. (2008)*** who reported urgency occurs in (60%) of pregnancies, and most of women developing urge urinary incontinence in the third trimester. On the other hand ***(Kazemier BM, et al. (2012)*** reported that the common symptoms of urinary tract infection include burning feeling during urination, frequent or intense urges to urinate, even when one have little urine to pass, pain in the back or lower abdomen, cloudy, dark, bloody, or unusual-smelling urine, fever or chills. ***(Haider,et al., (2010)*** also reported that the common urinary symptoms are abnormal voiding pattern (40.3%) followed by irritative symptoms and voiding difficulties. Further more ***(Guinto VT et,al.,(2010), (Colgan, R, et al., (2011)*** reported that the urinary tract infections are associated with preterm labor or delivery.Untreated upper tract UTIs are associated with low birth weight, premature, preterm labor, hypertension, preeclampsia, maternal anemia, and amnionitis. ***(Wagenlehner, FM et al.,(2013)*** also stated that urinary tract infection during pregnancy is independently associated with intrauterine growth restriction, preeclampsia, preterm delivery, and cesarean delivery.

The present study findings also revealed serious deficiencies in pregnant women knowledge regarding most of the studied items before implementation of the guidelines intervention. The majority of women lacked knowledge about physiological changes during pregnancy,they didn't know the meaning of UTI and also were unfortunately unaware with the adverse effect of UTI on themselves and their baby.They gave low score levels noticed or weak scores of knowledge (gave incorrect and incomplete answers) before the intervention. These findings are expected due to the improper knowledge and lack of antenatal classes on the issue of UTI during pregnancy. These findings are supported by***(Minassian C, et al., 2013)***who mentioned lacking of knowledge about physiological changes during pregnancy and that the pregnant women are at high risk for urinary tract infection. These results also enlighten that nurses who care for pregnant women need a clear understanding of pregnancy, its changes, discomforts, problems arisen as well as possible complications and that although most women should be pleased and comfortable with her pregnancy. The symptoms of UTI with pregnancy tend to cause discomforts to the woman and may become frustrated, so the nurse should be knowledgeable with good teaching skills to provide sound advice about measures to relieve UTI discomforts and helps to promote the overall health and well being of a pregnant client.

Meanwhile, according to the present study findings, significant improvements were shown in women total scores of knowledge from poor or weak score levels to good levels regarding most of the studied items.The items that demonstrated significant improvements after implementation of the intervention were related to physiological changes during pregnancy, causes, signs and symptoms, risk factors of urinary tract infection, problems associated with UTI, adverse effect on pregnancy and baby and also the preventive and management self care measures to relieve urinary tract infection symptoms. This improvement refers to the effect of the instructional guidelines and teaching sessions given to the pregnant women to change their behavior, enhance and upgrade their self care practices to relieve their urinary tract infection symptoms.As urinary tract infection, can be reduced by doing the following healthy measures such as: Develop a habit of urinating as soon as the need is felt and empty bladder completely when you urinate. Urinate before and after intercourse, avoid intercourse while you are being treated for an UTI., after urinating blot dry (do not rub), and keep your genital area clean. Make sure that you wipe from the front toward the back, avoid using strong soaps, douches, antiseptic creams, feminine hygiene sprays, and powders. Change underwear and pantyhose every day; avoid wearing tight-fitting pants. Wear all cotton or cotton-crotch underwear and pantyhose; don't soak in the bathtub longer than 30 minutes or more than twice a day, drink 6-8 glasses of water each day and unsweetened cranberry juice regularly, and eliminate refined foods, fruit juices, caffeine, alcohol, and sugar.

The findings of the present study are in line with ***(Hill JB et al. (2005)*** noted that the measures that reduce the risk of urinary tract infection are: use of condoms, voiding after sexual contact, and the type of underwear used, personal hygiene methods used after voiding or defecating, and whether one takes a bath or shower. In addition, ***(Grigoryan, L, (2013)*** found th**at** Pelvic floor exercise and bladder retraining can be offered to women with bothersome lower urinary tract symptoms during pregnancy to reduce the risk of urinary incontinence. Again**, *(Smaill F et al.(2007)***& - ***(McKenzie H, et al. (1999),*** reported Screening of all pregnant women for bacteriuria at prenatal care and recommended follow-up urinalysis and advised the importance of proper personal hygiene and good environmental sanitation habits mostly during pregnancy. Furthermore, ***(Alvarez JR et al.,(2010)*** who reported that the high incidence of urinary tract infection may be due to hormonal effects observed in

pregnancy and ***(Hollowell JG. et al., (2008)*** reported that the probability of delivering premature infants and low birth weight are higher among those who experienced UTIs during pregnancy and causes preterm delivery.

As regards the self care practices as reported and performed by pregnant women to relieve their signs and symptoms of urinary tract infection such as for example dysurea and dysparonia and the other reported symptoms mentioned before. In the present study although a vast majority of women before the implementation of the intervention, performed self care measures to deal with their UTI symptoms, and perceived them effective and so beneficial.These self care measures were sitz bath in salt water,sitz bath in water with chamomile, perform vulval and vaginal washing with watermelon, cold compression on bladder, use gel for pain in intercourse, intake of self prescribed medications, use anti septic solution in water for perineal care, apply spermicidal creams, and vaginal douches, as well as the reported unhealthy daily habits (life style). These habits as reported by women were eating spicy and heavy food; drink frequent times of coffee and tea, drink home remedies, not practicing any type of exercises, also most of them were negative smokers. These findings may reflect the misguidance and ignorance of pregnant women regarding the adverse effect of these wrong behaviors on their pregnancy. In fact these traditional self care practices from a point of view considered mostly incorrect or unhealthy behavior and may not applied correctly(unsatisfactory self care practices) that may lead to negative or adverse effects on pregnancy outcome. Hence pregnant women were in great need to increase their awareness and knowledge regarding the risk of urinary tract infection and its possible complications.

This is accordance ***(Versi E, Chia P et al.(2004)*** who mentioned that traditional self care measures may cause health hazards, such as, oil-based products use to relieve dysparunia,may prevent air reaching the skin and increase the risk of infection and skin irritation**.**

Moreover**,*(Mazor-Dray E,et al.(2009)*** also reported that maternal cigarette smoke exposure has been associated with preterm delivery and the use of caffeine has been associated with fetal growth restriction and miscarriage and low birth weight. ***(Santillo, VM,et al. (2007)*** also suggested that regular exercise,avoid irritant and spicy food and diet consists of processed food like cheese, chocolate, dairy products, caffeine, alcohol and cigarettes are helpful in relieving UTIs which otherwise are harmful. Others stated that the incorrect daily habits may course change of pH of urine become more alkaline, and hence it is good media for growth microorganisms.

Meanwhile, after the implementation of the intervention and the instructed guidelines for pregnant women regarding performance of healthy self care practices, a significant positive effect on their relief of urinary tract infection symptoms are evident by the study findings.Where it is revealed that most of women's UTI symptoms have been significantly relieved or somewhat improved by a way or another after healthy self care measures have been instructed, followed and used. These findings are supported by ***(Salvatore, S, et al., (2011)*** who reported that perineal care must be using plastic bottle filled with warm water with an antiseptic solution to cleanse the perineal area after the mother voids or defecates in direction from front to back. ***(Duarte G, Marcolin AC et al. (2008)***also reported that the warm showers can be therapeutic because they relax tense**,** tired muscles, help counter insomnia, and make the pregnant women feel fresh. Also ***(Sheiner E, Mazor-Drey E et al., (2009)*** recommended the follow-up urine analysis and advised the importance of proper personal hygiene and good environmental sanitation habits mostly during pregnancy. So, this study highlighted that there was lack of women's knowledge regarding physiological changes during pregnancy and they were also lacked the concept of self care practice as well as the basic health practices. However, the need to raise awareness regarding UTIs and to expand services for prevention and treatment for pregnant women as well as health education to learn about self care practices during pregnancy is crucial.

Conclusion and Recommendations:

Based on the findings of the present study, it can be concluded that the majority of pregnant women were lacked the essential knowledge regarding urinary tract infection and its effect on themselves and their baby.The study findings also reported inadequacies regarding their self care practices which represent their lacking of the concept of healthy self care practice. Meanwhile, after conduction of the interventions regarding performance of effective and healthy self care measures immediately and three months follow up, significant improvement was obvious among women relief of most of their reported urinary tract infection symptoms.

Therefore, the recommendations pertaining to this study could be:

1. Improve the quality of health care provided at the community level. Since urinary tract infection may be symptomatic and asymptomatic in most cases, it is therefore suggested that routine screening of women with unexplained sources of fever and signs of infection.

2. Raising women awareness regarding physiological changes during pregnancy, warning signs of pregnancies specially infections.

3. Health education about self care practices to be geared for reinforcement, modification and/or abolishment according to their benefits versus harm.

4. Self care concept should be empowered as an essential part of all levels and strategies of women health care.

5. Further researches are needed regarding factors and barriers associated with the utilization of self care practices through reproductive years for women as well as for management of various gynecological problems.

6. Investigation of the most common seeking self care herbs as regard their effect, benefits and side effects on women's quality of life.

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