

Prevalence of Asymptomatic Bacteriuria among pregnant women attending antenatal care at Semienawi Asmara Health Center

ABSTRACT

Aim: This study was carried out to assess the prevalence of asymptomatic bacteriuria (ASB) among asymptomatic and symptomatic pregnant women attending antenatal care follow up at Semienawi Asmara Health Center (SAHC).

Study design: This study was a cross sectional and quantitative study to assess the prevalence and risk factors associated with ASB among 200 pregnant women who were attending antenatal follow up in SAHC. A written consent form was obtained from the participants. A structured questionnaire was used to collect the socio-demographic data and data on possible risk factors from the study subjects.

Place and Duration of Study: The current study was carried out in SAHC, Eritrea, during the period of March to June, 2013.

Methodology: A total of 200 subjects were recruited for the study using a convenient sampling technique according to their sequence of arrival. Clean catch midstream urine was collected from each pregnant woman into a sterile container. The urine samples were examined chemically, microscopically, and by cultural methods.

Results: A total of 19(9.5%) were positive for culture tests. There was a significant difference in the prevalence of ASB among asymptomatic and symptomatic pregnant women. Generally there was a significant association between risk factors like parity, not washing genitals, blood relative with Urinary tract infection (UTI), signs and symptoms, previous UTI and gestational age, with UTI (P -value of <0.05). However, age, treatment, preexisting medical condition, delay in urination, usage of contraceptives, and level of education were not significantly associated with UTI ($P>0.05$). *Escherichia coli* was found to be the most predominant microorganism followed by streptococcus group D.

Conclusion: Asymptomatic bacteriuria is not uncommon among pregnant women attending antenatal care in the population studied. Routine urine cultural tests should be carried out on all pregnant women in order to identify any infection.

Keywords: Prevalence, asymptomatic bacteriuria, asymptomatic, symptomatic, risk factors

1. INTRODUCTION

Asymptomatic bacteriuria is of the common bacterial infections, affecting human beings throughout their life span especially in women in which nearly 50% of them develop symptoms of urinary tract infections due to bacteriuria at some stage during their life¹. Urinary Tract Infection is an infection caused by the growth of microorganisms anywhere in the urinary tract². It is characterized as being either upper or lower based primarily on the anatomic location of the infection³. The lower urinary tract encompasses the bladder and urethra, and the upper urinary tract encompasses the ureters and kidneys. Urinary tract infections are the second most common type of infection in the body, accounting for about 8.1 million visits to health care providers each year.

About 95% of UTIs occur when bacteria ascend the urethra to the bladder and, in the case of acute uncomplicated pyelonephritis, ascend the ureter to the kidney. The remainder of UTIs is hematogenous. It often develops in the first month of pregnancy and is frequently associated with a reduction in concentrating ability, suggesting involvement of the kidney. As a result; bacteriuria during pregnancy has a greater propensity to progress to pyelonephritis³.

Asymptomatic bacteriuria is defined as isolation of a specified quantitative count of bacteria in an appropriately collected urine specimen from an individual without symptoms or signs of urinary tract infection⁴. It is found in 2% of sexually active women and is more common (up to 70%) during pregnancy. It refers to persistent, actively multiplying bacteria within the urinary tract in asymptomatic women⁵. Its prevalence depends on parity, race, and socioeconomic status. Because most women have recurrent or persistent bacteriuria, it frequently is discovered during prenatal care. **Pregnancy predisposes** asymptomatic patients to symptomatic UTI, in which about 10% of those with asymptomatic bacteriuria develop symptomatic bacteriuria, which is easily diagnosed and treated due to its overt symptoms¹. Symptomatic urinary tract infection may involve only the lower urinary tract, in which case it is known as a bladder infection. Of patients with symptomatic bacteriuria, 40% would become symptomatic with UTI and acute pyelonephritis which can cause fetal growth restriction, fetal death, and preterm birth.

2. MATERIALS AND METHODS

2.1 Study Design

This study was a cross sectional and quantitative study designed to assess the prevalence and risk factors associated with UTI among 200 pregnant women who were attending antenatal follow up in SAHC. The subjects were recruited to the study during their visit to the health center with respect to their maternal age, gestational age, educational level, history of urinary tract infection, and other related conditions.

The participants were asked to give a written consent to verify that they were participating in the research of their own free will. A structured questionnaire was used to collect the socio-demographic data and data on possible risk factors. Specific instruction for collection of mid-stream urine specimen was provided by the researchers. The subjects were screened for bacteriuria using a dipstick test for nitrite and microscopic analysis for bacteria and **white blood cells**. All the samples were confirmed using culture methods. Isolates were identified to the species level using standard protocols. The colony count of more than 100,000 per ml of urine was taken as significant bacteriuria.

2.2 Data and Sample Collection

2.2.1 Study Population

The study was conducted on pregnant women at SAHC. Convenient sampling method was used to select 200 pregnant women. The study was conducted from March to June, 2013. Each participant was given a study number that links the questionnaire to the sample. Socio-

demographic data was obtained by means of personal interview and a questionnaire. Subjects who have been on antibiotic treatment two weeks prior to the study were excluded.

2.2.2 Data Collection

Subjects were selected based on their sequence of arrival. After consent was obtained from the selected subjects, the researchers filled the structured questionnaire related to their personal information, medical history, clinical presentation and associated risk factors.

2.2.3 Sample collection and processing technique

Urine samples were collected into sterile universal containers at the site. Clean catch mid – stream urine sample was shipped to the laboratory for identification. Samples were inoculated in Nutrient agar, MacConkey's agar and bile esculin agar and were allowed to be incubated for 24 hours. Colony counts yielding bacterial growth of 100,000/ml or more of pure isolates were regarded as significant for infection. Once grown, the colonies were isolated for gram staining. Gram positive organisms were checked for catalase activity, and for gram negative organisms, a series of biochemical tests were performed, including carbohydrate fermentation test, amino acid utilization test, urea utilization test, Triple Sugar Iron (TSI), citrate test and other enzymatic tests for specific identification of the organisms.

2.3 DATA PROCESSING AND ANALYSIS

All the data derived from the questionnaires, urinalysis, and microbiological surveys was treated to SPSS software package (PASW, SPSS version 18) to facilitate data entry and analysis. Tables, graphs and other summary measures like proportions and means were used to describe the obtained data. Chi-square was applied to see the possible presence of association. *P*-value less than 0.05 was taken as significant.

3. RESULTS AND DISCUSSION

3.1. General Description of Study

The data collected from the questionnaire and the laboratory test results were entered in to SPSS software version 18. Anonymity was maintained by answering questionnaire which bears no name and was only linked with the sample by the study number. The results of the tests and questionnaire were presented in notes and the most significant findings which hit the theme of the study was, specially stressed out frequently in tables and figures format. Out of the 200 subjects involved in the study 68 (34%) were symptomatic and 132(66 %) were asymptomatic.

The mean age of the subjects was 26.6 ± 5.4 with a minimum of 16 years and maximum of 45 years. Out of the pregnant women (n=200): 100(50%), 83(41.5%) and 17(8.5%) were between the age range of 16-25, 26-35 and 36-45 respectively (Table 1). All the pregnant women were from Zoba Maekel (Central zone). The gestational age of the pregnant women was such that, 25(12.5) were in their first trimester, 89(44.5%) were in their second trimester and 86(43%) were in their third trimester. Regarding the parity of the pregnant women 51(25.5%) were having child for the first time and 149(74.5%) were multiparous. From the total 200 subjects who hadn't taken any antibiotics within the last two weeks 68(34%) were with signs and symptoms of UTI while the remaining 132(66%) were without signs and symptoms.

3.2 Laboratory Analysis

The final phase of the study was urine sample analysis from the pregnant women. After filling the informed consent and structured questionnaire, the pregnant women were instructed to collect clean catch midstream urine samples. Samples were linked to the questionnaires and to the study subjects by study numbers. Urine sample analysis was performed within one hour of collection. Initially chemical test (dipstick) was done for nitrite reductase and leukocyte esterase tests, and then microscopic examination of the sample was done. These tests were then confirmed using culture tests.

3.2.1 Urine Physicochemical Analysis

Chemical analysis was done in all the 200 urine samples collected and the results indicate that 53(26.5%) were positive for leukocytes, whereas the remaining 147(73.5%) were leukocyte negative (Table 2A). Out of the leukocyte positive results (n=53), 10(18.9%), 30(56.6%) and 13(24.5%) were +1, +2 and +3 for leukocyte respectively. Chemical analysis of urine specimen (n=200) for nitrite test showed that 6(3%) were positive and 194(97%) were negative as shown in table 2B.

Table 1. Gross description of the study subjects attending SAHC

Characteristics	Pregnant women N= 200
Age group	
16-25	100(50%)
26-35	83(41.5%)
36-45	17(8.5%)
Gestational age	
1 st trimester	25(12.5%)
2 nd trimester	89(44.5%)
3 rd trimester	86(43%)
Parity	
Nulliparous	51(25.5%)
Multiparous	149(74.5%)
Clinical information	
Symptomatic	68(34%)
Asymptomatic	132(66%)

Table 2A. Leukocyte esterase status

	Positive=53(26.5%)	Negative=147(73.5%)
+1	10(18.9%)	-
+2	30(56.6%)	-
+3	13(24.5%)	-

Table 2B. Nitrate reductase status

	N (%)
Positive	6(3%)
Negative	194(97%)

3.2.2 Microscopic Analysis

Urine microscopic test was done on the samples collected from the pregnant women (n=200). The results shows that all of the 200 samples of the pregnant women has shown microscopic WBC graded as few, moderate and too many with a count of 149(74.5%), 31(15.5%) and 20(10%) respectively. 17(8.5%) were positive for microscopic RBC out of which 2(1%), 4(2%) and 11(5.5%) represented for few, moderate and too many RBC respectively, while 183(91.5%) were negative for microscopic RBC as shown in table 3.

Table 3. Microscopic results

	Few	Moderate	Too many	Negative
Microscopic WBC(n= 200)	149(74.5%)	31(15.5%)	20(10%)	0
Microscopic RBC(n= 200)	2(1%)	4(2%)	11(5.5%)	183(91.5)

Table 3. Microscopic results

	Few	Moderate	Too many	Negative
Microscopic WBC(n=200)	149(74.5%)	31(15.5%)	20(10%)	0
Microscopic RBC(n=200)	2(1%)	4(2%)	11(5.5%)	183(91.5)

3.2.3 Urine Culture

The study was carried out in 200 pregnant women whose urine samples were inoculated into different culture media. The outcome of the culture result indicates that 53(26.5%) showed growth while the remaining 147 (73.5%) were without any growth. Out of the 53 isolates which showed growth, 19(35.85%) were pathogenic organisms and the remaining 34(64.15%) were CONS.

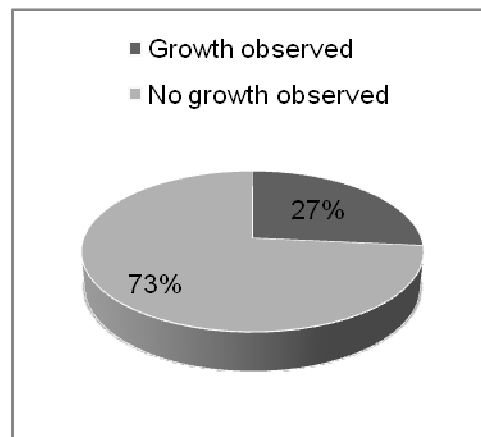


Figure 1. Culture result of the urine specimen obtained from the subjects

A total of 5 bacterial species were found out of the pathogenic isolates (n=19) in which 1(20%) were found overlapping along with the previous isolate, while 4(80%) were not overlapping. *Escherichia coli* was found to account for 13(68.4%) followed by *Streptococcus* group D 3(15.7%) being the second most commonly encountered organism. The rest 2 species *Enterobacteriaceae* and *K.pneumoniae* account for 5.3% and 10.5% respectively as shown in Figure 1.

Table 4. Frequency of organisms isolated from urine specimen in the study (N=19)

Species name	N (%)
<i>Escherichia coli</i>	13(68.40%)
<i>Streptococcus group D</i>	3(15.80%)
<i>K.pneumoniae</i>	2(10.50%)
<i>Enterobacteriaceae</i>	1(5.30%)

3.3 COMPARISON OF LABORATORY RESULTS

The 200 samples were tested for different types of diagnostic parameters that include microscopic test of RBCs, WBCs, chemical test for leukocyte and nitrite as well as culture. Out of the 200 samples which were studied for growth of microorganisms, 19(9.5%) showed a significant positive culture result and the rest 181(90.5%) samples showed no growth. Taking culture as a gold standard, comparison of all the tests was done for culture positive urine specimens as shown in table 5.

The results of the comparison indicated that all the culture positive samples were also found to be leukocyte positive. Regarding the nitrite test, out of the 19 culture positive samples 5(26.3%) were nitrite positive while the remaining 14(73.7%) were nitrite negative. The microscopic test results indicated that all the culture positive samples (n=19) were also found to be positive for WBCs, 10(52.6%) of the culture positive samples were positive for RBCs, while the remaining 9(47.4%) culture positive samples were found to be negative for RBCs.

Table 5. Comparison of laboratory results (n=19)

	+	-
Leukocyte. Esterase	19	0
Nitrite Reductase	5	14
WBC	19	0
RBC	10	9

3.4 RISK FACTORS FOR UTI

The presence of possible underlying risk factors among participants was assessed by filling the structured questionnaire, related to the basic demographic, previous UTI, treatment, medical condition, family history of UTI, signs and symptoms of UTI, delay in urination, contraceptive usage, level of education, parity, and gestational age. Out of the 200 subjects, 100(50%) were in the age range of (16-25), 83(42%) were in the age range of (26-35) and 17(9%) were in the age range of (36-45). The 'Yes' responses for not washing genitals were 37(18.5). 163(81.5)

responded 'No'. The 'Yes' responses for previous UTI were 51(25.5%) and whereas 149(74.5%) responded 'No'. The 'Yes' responses for treatment to previous UTI were 8(4%) and there were also 192 (96%) 'No' respondents. The 'Yes' responses for having a blood relative with UTI were 6(3%) and there were also 194(97%) No respondents. The Yes respondents for having pre-existing medical condition were 6(3%) and the No respondents were 194(97%).

The Yes respondents for having signs and Symptoms of UTI were 68(34%) and the No respondents were 132(66%).The 'Yes' respondents for not urinating immediately were 39(20%) and 161(80%)) responded No. The 'Yes' respondents for usage of contraceptive were 48(24%) and there were 152(76%) No respondents. The respondents level of education was low 98(49%), middle 91(45.5%) and the 11(5.5%) were in higher education. With regard to parity 51(25.5%) were uniparous and 149(74.5%) were multiparous. Among the pregnant women 25(12.5%) were in their first trimester, 89(44.5%) were in their second trimester and 86(43%) were in their third trimester as shown in table 6.

Table 6. Risk factors of the study participants

Risk factors	Response	No. of pregnant women(n=200)
Age group	16-25	100(50%)
	26-35	83(41.5%)
	36-45	17(8.5%)
Not washing genital area	Yes	37(18.5%)
	No	153(81.5%)
Previous UTI	Yes	51(25.5%)
	No	149(74.5%)
Treatment to previous UTI	Yes	8(4%)
	No	192(96%)
Blood relative with UTI	Yes	6(3%)
	No	194(97%)
Past med. condition	Yes	6(3%)
	No	194(97%)
Signs and Symptoms	Yes	68(34%)
	No	132(66%)
Urinating immediately	Yes	161(81%)
	No	39(20%)
Usage of contraceptive	Yes	48(24%)
	No	152(76%)
Level of education	Low	98(49%)
	Middle	91(45.5%)
	higher	11(5.5%)
Parity	Nulliparous	51(25.5%)
	multiparous	149(74.5%)
Gestational age	1 st trimester	25(12.5%)
	2 nd trimester	89(44.5%)
	3 rd trimester	86(43%)

3.5 Association of Risk Factors with Asymptomatic Bacteriuria

In this study, out of those pregnant women who were positive for UTI(n=19), 9(47.4%) were in the age range of (16-25), 8(42.1%) were in the age range of (26-35) and 2(10.5%) were in the age range of (36-45). The 'Yes' response for washing genital was 11(57.9%) and the rest responded 'No'. The 'Yes' responses for having previous UTI were 9(47.4%) and 10(52.6%) responded 'No'. The 'Yes' respondents for having a blood relative with UTI were 3(15.8%) and there were also 16(84.2%) No respondents. The 'Yes' respondents for having pre-existing medical condition were 1(5.3%) and the 'No' respondents were 18(94.7%). The Yes respondents for signs and symptoms of UTI were 12(63.2%) and the No respondents were 7(76.8%). The Yes respondents for urinating immediately were 15(78.9%) and 4(21.1%) responded No. The Yes respondents for usage of contraceptive were 6(31.6%) and there were No 13(68.4%) respondents. The respondent's level of education was 7(36.8%) low, 12(63.2%) middle and 0% in higher education. With regard to parity 1(5.3%) were uniparous and 18(94.7%) were multiparous. Among the pregnant women 5(26.3%) were in their first trimester, 4(21.1%) were in their second trimester and 10(52.6%) were in their third trimester. The responses of the pregnant women who are positive for UTI is shown in table 7.

Six out of the 12 risk factors and practices in relation to UTI were found to be statistically significant with the exception of age, having treated to previous UTI, preexisting medical condition, not urinating immediately, usage of contraceptive and level of education. In order to see the strength of the association of the risk factors and practices between the pregnant women who were found to be positive for UTI and those which are negative odds ratio was calculated as shown in table 7.

Table 7. Associated risk factors with ASB

Risk	Response	Positive for UTI(n=19)	Negative for UTI (n=181)	P value	Odds ratio
Age	16-25	9(47.4%)	91(50.2%)	0.936	
	26-35	8(42.1%)	75(42.3%)		
	36-45	2(10.5%)	15(8.3%)		
Not washing genital area	Yes	8(42.1%)	29(16.02%)	0.005	
	No	11(57.9%)	152(83.9%)		3.812(1.411-10.295)
Previous UTI	Yes	9(47.4%)	42(23.2%)	0.022	
	No	10(52.6%)	139(76.8%)		0.34(0.128-0.881)
Treatment to previous UTI	Yes	0	8(4.4%)	0.35	
	No	19(100%)	173(95.6%)		
Blood relative with UTI	Yes	3(15.8%)	3(1.7%)	0.001	
	No	16(84.2%)	168(98.3%)		0.090(0.017-0.482)
Pre-existing med.condition	Yes	1(5.3%)	5(2.8%)	0.543	
	No	18(94.7%)	176(97.2%)		
Signs and Symptoms	Yes	12(63.2%)	56(30.9%)	0.05	
	No	7(36.8%)	125(69.1%)		0.261(0.098-0.699)
Not Urinating Immediately	Yes	4(21.1%)	35(19.34%)	.857	
	No	15(78.9%)	146(80.66%)		
Usage of Contraceptive	Yes	6(46.1%)	42(23.2%)	0.416	
	No	13(53.9%)	139(76.8%)		
Level of Education	Low	7(36.84%)	92(50.83%)	0.199	
	Middle	12(63.16%)	79(43.65%)		
	Higher	0(0%)	11(5.52%)		
Parity	Uni	1(5.3%)	50(27.63%)	0.033	6.87(0.893-52.829)
	Mul	18(94.7)	131(72.37%)		
Gestational Age	1-T	5(26.3%)	20(11.1%)	0.044	
	2-T	4(21.1%)	85(46.9%)		
	3-T	10(52.7%)	76(41.92%)		

Key: Uni-uniparous, Mul-multiparous, 1-T=1st trimester, 2-T=2nd trimester, 3-T=3rd trimester

Asymptomatic bacteriuria is a major health problem, it has been reported among 20% of the pregnant women and it is the most common cause of admission in obstetrical wards². Symptomatic and asymptomatic bacteriuria has been reported among 17.9% and 13.0% pregnant women, respectively⁷.

Urinary Tract Infections (UTIs) is an infection caused by the presence and growth of microorganisms anywhere in the urinary tract. It is perhaps the single most common bacterial infection of humans. UTI is evident when there is bacterium per milliliter in midstream urine samples⁹. Asymptomatic bacteriuria is the presence of actively multiplying bacteria at the time when the patient has no urinary symptoms so that the diagnosis relies upon microbiologic findings^{1,6,8}.

Pregnant women are at increased risk for UTIs with incidence rates being as high as 8% in the United States¹⁰. Asymptomatic bacteriuria in pregnancy has been attributed to increase urinary stasis, ureteric relaxation and other anatomical changes. These pathological conditions begin in week 6 and peak during weeks 22 to 24¹⁰. Women with asymptomatic bacteriuria during pregnancy are more likely to deliver premature or low-birth-weight infants and even fetal wastage. A review of birth certificate data for the state of Washington reported that women with urinary infection (UTI) associated pregnancy had a fetal mortality rate 2.4 times greater, low birth rate 2.04 times greater, and prematurity 2.4 times greater than those without urinary infection. These pregnant women also have a 20 to 30-fold increased risk of developing pyelonephritis¹¹⁻¹³ compared with women without bacteriuria.

Pregnant women with asymptomatic bacteriuria are at high risk for a number of complications for both mother and the unborn¹⁴⁻¹⁶. Maternal complications include overt urinary tract infection for 30 to 40% of patients especially as pregnancy advances. Whether or not symptomatic urinary tract infection ensues, the fetus is still at risk for prematurity, low birth weight and even fetal wastage¹¹⁻¹³. Thus, in the obstetric patients, there is little if at all any doubt, regarding the need for early screening for asymptomatic bacteriuria. A cost-analysis study found that screening is cost-effective when the prevalence of bacteriuria is >2%. The exact prevalence rate of UTI in symptomatic and asymptomatic pregnant women in the general population of Eritrea is unknown, and the only data available is the monthly case report from the health centers. In light to this, this study being a cross-sectional study with the objectives of assessing the prevalence of UTI among pregnant women and its related risk factors, could be described as the first study of its kind in Eritrea.

The current study identified the common organisms causing symptomatic and asymptomatic UTI s by assessing urinalysis (chemical, microscopic, culture and sensitivity test) and identified the possible risk factors associated with UTI in symptomatic and asymptomatic pregnant women attending antenatal visit at SAHC. Comparisons of the risk factors were made between pregnant women with signs and symptoms for UTI and with those which are asymptomatic. Evaluation of risk factors between those two groups was made based on detailed questionnaires related to personal information, medical history, clinical presentation, and associated risk factors. The study subjects were 68 symptomatic and 132 asymptomatic pregnant women, selected using convenient sampling technique according to their sequence of arrival. The study included only subjects who had not taken antibiotics within two weeks before they were selected to participate in the study. After taking informed consent, data was collected on a structured questionnaire comprising of personal data and risk factors known to expose them to UTI. The pregnant women, after filling consent and questionnaire were requested to give urine. In the current study the prevalence rate of UTI in symptomatic and asymptomatic pregnant women was 9.5% in which 12(89.47%) of them were symptomatic and 7(10.52%) were asymptomatic). This was justifiable as pregnant women with signs and symptoms are more at risk than the asymptomatic ones for infection. This is comparable with the incidence rate of UTI 8% in the United States¹⁰. The prevalence of asymptomatic bacteriuria was reported to be as high as 21% in a study from Ibadan city, Nigeria¹⁷ and 86.6% in another study from Benin City, Nigeria¹⁸.

This research also found out there was a statistically significant association between culture positive test result and possible risk factors included in the questionnaire. The other risk factors with a statistically significant relation with culture positive test result were also found. Out of the 12 possible risk factors, 6 were found to be statically significant($p < .05$) which including subjects are not washing genital area, previous UTI, having blood relative with UTI, having signs and symptoms, **multiparity** and third trimester gestational age.

The overall prevalence of UTI in symptomatic and asymptomatic pregnant women in this study was found to be 9.5%. If this is compared with the data from other countries, similar results were reported by C. Obirikorang among pregnant women attending antenatal clinic at the university hospital, Kumasi Ghana with a prevalence rate of 9.5% and Robina Ali, Uzma Afzal, Samina Kausar reported a prevalence of 5% among pregnant women of DHQ, faisland Pakistan hospital⁶. The current prevalence is comparable with the incidence rate of UTIs 8% in the United States⁴⁰. The prevalence of asymptomatic bacteriuria was reported to be as high as 21% in a study from Ibadan city, Nigeria¹⁷ and 86.6% in another study from Benin City, Nigeria¹⁸. The prevalence of asymptomatic bacteriuria in pregnant women in this study is lower than the 23.9% from the study in Sagamu, Nigeria, and higher 7.3% reported in Ghana and 7% reported in Ethiopia. It is lower than the 86.6% earlier reported in Benin City, Nigeria and 78.7% reported in Abakaliki, Nigeria. The most commonly encountered organism was in the current study is E. coli followed by Streptococcus group D.

Risk factors and practices known to expose the pregnant women to UTI problems were assessed as shown in table 7. A total of twelve risk factors and practices were included in the questionnaires. In this study the number of frequencies and percentages of the risk factors and practices from the pregnant women who are found to be positive (n=19) in descending order were found to be multiparity18(94.7%), having signs and symptoms12(63.2%), level of education 12(63.2%),age range of (16-25)100(50%), having previous UTI 9(47.4%), not washing genital area 8(42.1%), first trimester gestational age 5(20%),not urinating immediately 4(21.1%), having blood relative with UTI 3 (15.8%), pre-existing medical condition 1(5.3%) and having treated to previous UTI 0(0%).

When the risk factors were compared between pregnant women who were found to be positive for UTI and those who are negative for UTI, the responses for washing genitals, previous UTI, blood relative for UTI, having signs and symptoms of UTI, parity and gestational age were found to be much higher in the pregnant women with UTI than those which are found to be without UTI. Regarding the responses for age, treatment to previous UTI, pre-existing medical condition not urinating immediately and usage of contraceptive were found to be much higher in those pregnant women negative for UTI. The risk factors and practices which were statistically significant, were; not washing genitals, previous UTI, blood relatives with UTI, signs and symptoms and parity the remaining factors were insignificant. In order to see the strength of the association of the risk factors and practices, odds ratios were calculated as is shown in table 7. Those pregnant women who were not washing their genital area had 3.8 times higher risk (95% CI; 1.411-10.295) of getting UTI when compared with those who were washing. Having previous UTI and blood relative With UTI can increase the risk of getting UTI by 34% and by 9% respectively. More over pregnant women who are with signs and symptoms of UTI are at increased risk 26% than those without signs and symptoms of UTI. Multiparous pregnant women are 6.87 times more at risk (95%CI; 0.098-0.699) of getting UTI when compared with the pregnant women who are having child for the first time. However in a study conducted in Sri Lanka there was no significant association between bacteriuria and the risk factors; gestational diabetes, past urinary tract infection, multiparity, advanced maternal age, lower education level, advanced gestational age and lower socioeconomic status when analyzed using the Fisher exact test.

4. CONCLUSION

This study was conducted to determine the prevalence of Urinary Tract Infections (UTI) among pregnant women of SAHC. Out of the total 200 subjects 19(9.5%) had positive culture result while the remaining 181(90.5%) had negative culture result. It is therefore imperative that

pregnant women are screened for UTI periodically every trimester of the gestational period as it is important to carry out urine culture of pregnant women.

Risk factors which showed significant association with urinary tract infection were gestational age, parity, blood relative, previous history of UTI and not washing genital area. In this study pregnant women in the first trimester were more exposed to urinary tract infections compared to second and third trimesters, and multiparous women had high prevalence of UTI, compared to nulliparous. Pregnant women who don't wash their genital area showed significant culture growth.

CONSENT

All authors declare that 'written informed consent was obtained from the patient (or other approved parties) for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editorial office/Chief Editor/Editorial Board members of this journal.

ETHICAL APPROVAL

All authors hereby declare that all experiments have been examined and approved by the appropriate ethics committee and have therefore been performed in accordance with the ethical standards laid down in the 1964 Declaration of Helsinki.

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