# PREVALENCE OF ASYMPTOMATIC BACTERURIA AMONG PREGNANT WOMEN IN BASRAH CITY ESPECIALLY RELATED WITH PERSONAL HYGIENE AND SEXUAL ACTIVITY

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## ABSTRACT

This cross sectional study was carried out to determine asymptomatic urinary tract infection among pregnant women with special emphasis to personal hygiene practice during sexual activity, mid stream specimen from healthy pregnant women was collected and cultured following standard microbiological technique. Colony count yielding bacterial growth $10^5$/mil or more was considered significant. Out of 215 healthy pregnant woman 38 (17.7%) had asymptomatic urinary tract infection, educational level for pregnant women was taken and it was found statistically significant in relation to asymptomatic urinary tract infection. Urinary tract infection increase with increasing gestational age, in second trimester it was found to be (11.6%) while in third trimester (37.7%). Personal hygiene, washing before and after sexual activity, drying after urination, changing under clothing, direction of wash, has no significant relationship to asymptomatic urinary tract infection. Frequency of sexual activity increase prevalence of asymptomatic urinary tract infection. 31.9% of pregnant women who had a history of previous UTI had a positive growth with high significant differences as compared with those who had no history of UTI. Fluid intake decreases prevalence of urinary tract infection among pregnant women (significant relationship). Bacterial pathogens isolated were predominantly E. Coli (36%) and klebsiella pneumonia (15%), while enterococcus, streptococcus and staphylococcus account only for (7.8%) for each. Candida (3.8%) and mixed pathogens (7.8%)

## INTRODUCTION

Asymptomatic bacteruria is common in woman and increases in prevalence with age and/or sexual activity (1). The impact of asymptomatic bacteruria on pregnancy outcome has been a focus of contraversery since the development of quantitative urine culture technique in mid 1950s, allowed clear differentiation of women with bacteruria from those without it (1). The prevalence is higher among woman in lower socio-economic classes and those with a past history of asymptomatic urinary tract infection (1). Asymptomatic bacteruria, in which urine culture reveals a significant growth of pathogens, that is greater than $10^5$ bacteruria/ml (2) but without the patient showing the symptoms of UTI, pregnancy enhances the progression from asymptomatic to symptomatic bacteruria which could lead to pyelonephritis and adverse pregnancy outcomes (3,4), low birth weight, higher

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fetal mortality rate (4,5). Although UTI may not always lead complications during pregnancy, but it is still a cause of significant mortality (6). In Ghana, reported prevalence of asymptomatic bacteruria in pregnant women was 9.3%, and the predominant organism was *E coli* (37%) and *staphylococcus aureus* (31%). The highest age specific prevalence was found in 35-39 years old (13%) and lowest at the 15-19 years. There was no significant difference in prevalence with increasing parity (7). In Nigeria, the prevalence rate was 23.9% (1993) (7). Akerele et al also reported 86.6% in Benin city (7). In Ethiopia, prevalence rate was (7%) in pregnant women has been reported in 1993 (8), and asymptomatic bacteruria was found to be (10.6%) (2008), and *E coli* was the predominant pathogen isolated (9). In Iran (2009), urine culture of asymptomatic bacteruria in pregnant women showed growth in only 8.9%, *E coli* was the most commonly organism isolated (58.9%), followed by *staphylococci* (16.8%) (10). Same results was found in other study in Iran 2009 and the prevalence of asymptomatic bacteruria was (5.1%) (11). This study was therefore undertaken to determine the prevalence of asymptomatic bacteruria in pregnant women attending antenatal care and to identify the organism involved in asymptomatic bacteruria with special emphasis to personal hygiene practice and sexual activity.

# METHODOLOGY

This cross-sectional study was conducted in antenatal clinic in Basrah city from January to April 2010, 215 healthy pregnant women were included in this study attending antenatal clinic. Socio-demographic data were collected using a special questionnaire which cover the following parameters such as, hygienic and obstetric history, medical history such as history of chronic diseases, e.g diabetes mellitus, sickle cell anemia. Mid stream urine specimen from each pregnant healthy woman was collected and cultured following the standard microbiological technique (1). Colony count yielding bacterial growth of $10^5$/ml or more was deemed significant. Isolation of species was identified by standard methods (1). The statistical analysis was done and statistical program SPSS was used to calculate P.Value and Chi-Square differences.

# RESULTS

Out of 215 pregnant woman had no symptoms of UTI, 38 (17.7%) had asymptomatic UTI (table1), the majority of women belong to middle and low socio-economic classes, high age spesifice prevalence of asymptomatic bacteruria was found among 29-34 years (table1). The relationship between level of education and asymptomatic bacteruria was found to be statistically significant ($P > 0.005$ ) (table1). There was significant relation between occupation and asymptomatic bacteruria. Evaluation of asymptomatic bacteruria prevalence in relation to gestational age of pregnancy was found that asymptomatic bacteruria increase with gestational age. The frequency of asymptomatic bacteruria in second trimester was found to be (11.6%) while in third trimester (37.7%), the relation was statistically significant (table2). According to personal hygiene in relation to asymptomatic bacteruria (washing before and after coitus), bathing, and frequency of changing under clothing, drying after washing, and direction of washing, has no significant relationship with asymptomatic bacteruria. Frequency of coitus increase

prevalence of asymptomatic bacteruria and urination after coitus decrease prevalence of asymptomatic bacteruria, both of these factors had significant relationship with asymptomatic bacteruria (table3). 31.9% of pregnant women who had a history of previous UTI had a positive growth with high significant differences as compared with those who had no history of UTI. The amount of liquid taken by pregnant women had significant relationship with asymptomatic bacteruria, increase in the amount of liquid decrease prevalence(table4). The bacterial pathogen isolated was predominantly *E coli* (36%) and *kelbsiela pneumonia* (15%) while *enterococcus species*, *staphylococcus*, and *streptococcus* account only for 7.8% each, and *candida* 3.8% and mixed pathogens 7.8%.

# DISCUSSION

Asymptomatic bacteruria is common in women and increase in prevalence with age and/or sexual activity (1), the physiological changes associated with pregnancy, such as the relaxion of the ureter under the effect of the hormones which are trophoblastic in origin and the increase urinary output result in urinary stasis. The composition of urine is also changed during pregnancy which may facilitate bacterial growth, and enlargement of the uterus compress the ureter as pregnancy advances. Prevalence of asymptomatic bacteruria associated with pregnancy may not always lead to complications during pregnancy but it is still a significant cause of mortality (6). In our study the prevalence of bacteruria was significantly high (17.7%). The highest rate of asymptomatic bacteruria may be due to the fact that majority of women come from middle and low socio-economic classes and they had low standards of living and low quality of life with poor water supply which lead to contamination during washing after urination. Asymptomatic bacteruria in our study increases significantly with decrease level of education. It is well known that urinary stasis increase with gestational age thus the prevalence of asymptomatic bacteruria was found high in our study in the second and third trimester (11.6%), (37.7%) respectively. This finding is similar to study in Iran 2000 (12), and significant relationship with parity increase with increasing parity this probably due to cystocyle and multipara not avoid sexual activity during pregnancy as primygravida . Personal hygiene, bathing, changing under clothing, pre and post coitus washing, all these measures have no significant effect. Sholkh et.al findings that frequency of personal hygiene methods used after urination or defecation and whether one takes shower or not have not been found to affect UTI which is in agreement with our study (13). However, urination after coitus, have significant relationship with asymptomatic UTI by flushing away the bacteria from the genitor-urinary system which may reduce prevalence of asymptomatic bacteruria which is similar to our results. Frequency of coitus has significant relationship with asymptomatic bacteruria, as it increases the chance of bacteria getting into the urinary tract and patient should usually be advised to urinate after intercourse. Liquid intake also helps to reduce asymptomatic bacteruria and has a significant effect in our study which is in agreement with other studies (12,13,14). The pregnant women with past history of UTI are women prone to asymptomatic bacteruria in contrast with those who had no past history of UTI. The most frequent isolated pathogen were *E coli* and *kelbsiela pneumonia* (36%, 15%)

respectively, which is similar to many other studies (6,7,8,9,10,11,12,13).

# CONCLUSION

1- Asymptomatic bacteruria significantly increase with increase parity, gestational age, and increase frequency of coitus.
2- Urination after coitus and fluid intake decrease significantly prevalence of asymptomatic bacteruria.
3- Pregnant women with past history of UTI are prone more to asymptomatic bacteruria than those who had nod.
4- Pre and post washing during coitus, bathing, changing under clothing, drying afte washing have no effect on prevalence of asymptomatic bacteruria.

# RECOMMENDATIONS

1- Urine culture should be done routinely in antenatal clinic in first visit of pregnancy and general urine examination every month to identify and address this health problem and initiate appropriate control measures.
2- Health education about personal hygiene with special emphasis to hygienic practice and healthy behaviors in pregnancy during sexual activity.

# TABLES

**Table 1**
**Socio-demographic distribution of women**

| Variables | No growth No. (%) | Growth No. (%) | Total No. % | P value |
|---|---|---|---|---|
| Age | | | | |
| 15-19 | 38 (84.4) | 7 (15.6) | 45 (100) | |
| 20-24 | 67 (84.8) | 12 (15.2) | 79 (100) | |
| 25-29 | 37 (82.2) | 8 (17.8) | 45 (100) | 0.421 |
| 30-34 | 25 (71.4) | 10 (28.6) | 35 (100) | |
| >35 | 10 (90.9) | 1 (9.1) | 11 (100) | |
| Occupation | | | | |
| House wife | 40 (76.9) | 12 (23.1) | 52 (100) | 0.167 |
| Worker | 137 (84) | 26 (16) | 163 (100) | 0.167 |
| Education | | | | |
| Illiterate | 100 (80) | 25 (20) | 125 (100) | |
| Primary | 6 (50) | 6 (50) | 12 (100) | 0.004 |
| Secondary | 39 (90.7) | 4 (9.3) | 43 (100) | |
| High Education | 32 (91.4) | 3 (8.6) | 35 (100) | |
| Total | 177 (82.3) | 38 (17.7) | 215 (100) | |

**Table 2**

**Distribution of women according to obstetric history**

| Variables | No growth No. (%) | Growth No. (%) | Total No. % | P value |
|---|---|---|---|---|
| Parity | | | | |
| 1-2 | 146 (86.9) | 22 (13.1) | 168 (100) | |
| 3-4 | 12 (60) | 8 (40) | 20 (100) | 0.003 |
| >5 | 19 (70.4) | 8 (29.6) | 27 (100) | |
| Gestational Age | | | | |
| First Trimester | 7 (100) | 0 (0) | 7 (100) | 0.000 |
| Second Trimester | 137 (89.4) | 18 (11.6) | 155 (100) | |
| Third Trimester | 33 (62.3) | 20 (37.7) | 53 (100) | |
| Total | 177 (82.3) | 38 (17.7) | 215 (100) | |

**Table 3**

**Distribution of women according to frequency of coitus or hygiene practice**

| Variables | No growth No. (%) | Growth No. (%) | Total No. % | P value |
|---|---|---|---|---|
| Frequency of coitus | | | | |
| <4/wk | 64 (92.8) | 5 (7.2) | 69 (100) | 0.004 |
| ≥4/wk | 113 (77.4) | 33 (22.6) | 146 (100) | |
| Urination after coitus | | | | |
| Urinate | 155 (90.1) | 17 (9.9) | 172 (100) | 0.000 |
| Not urinate | 22 (51.2) | 21 (48.8) | 43 (100) | |
| Wash after coitus | | | | |
| Pre-coitus wash | 10 (83.3) | 2 (16.7) | 12 (100) | 0.257 |
| Post-coitus wash | 123 (85.4) | 21 (14.6) | 144 (100) | |
| Pre and post-coitus wash | 28 (77.6) | 8 (22.2) | 36 (100) | |
| No wash | 16 (69.6) | 7 (30.4) | 23 (100) | |
| Frequency of changing under cloth | | | | |
| <4/wk | 165 (22) | 35 (17.5) | 200 (100) | 0.515 |
| ≥4/wk | 12 (80) | 3 (20) | 15 (100) | |
| Bathing | | | | |
| <4/wk | 138 (81.2) | 32 (18.8) | 170 (100) | 0.267 |
| ≥4/wk | 39 (86.7) | 6 (13.3) | 45 (100) | |
| Drying after wash | | | | |
| Drying | 46 (80.7) | 11 (19.3) | 57 (100) | 0.424 |
| Not Drying | 131 (82.9) | 27 (17.1) | 158 (100) | |

**Table 4**
**Distribution of women according to previous UTI and chronic disease and amount of liquid intake**

| Variables | No growth No. (%) | Growth No. (%) | Total No. % | P value |
|---|---|---|---|---|
| Previous UTI before 3 months | | | | |
| Present | 47 ( 68.1) | 22 (31.9) | 96 (100) | 0.000 |
| Not Present | 130 (89) | 16 (11) | 146 (100) | |
| Chronic disease | | | | |
| Present | 3 (100) | 0 (0) | 3 (100) | 0.556 |
| Not present | 147 (82.1) | 38 (17.9) | 212 (100) | |
| Liquid Intake | | | | |
| ≥0.5 litre/day | 69 (90.8) | 7 (9.2) | 76 (100) | 0.011 |
| <0.5 litre/day | 108 (77.7) | 31 (22.3) | 139 (100) | |

Table 5
Distribution of urinary pathogens causing asymptomatic bacteruria

| **Organism** | **Frequency** | **Percent** |
|---|---|---|
| *E coli* | 14 | 36.84 |
| *Klebsiela spp* | 6 | 15.87 |
| *Enterobacter spp* | 3 | 7.89 |
| *Staphylococcus sparophyticus* | 3 | 7.89 |
| *Staphylococcus aureus* | 3 | 7.89 |
| *Streptococcus* group B | 3 | 7.89 |
| *Proteus spp* | 1 | 2.63 |
| *Serratia* | 1 | 2.63 |
| *Candida* | 1 | 2.63 |
| Mixed | 3 | 2.63 |
| Total | 38 | 100.0 |

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