



## **A symptomatic bacteriuria (ASB) in Pregnancy with fetal and maternal outcome**

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### **Abstract**

The asymptomatic UTI is a persistent, actively multiplying bacteria within the urinary tract without any symptoms of infection. The prevalence in pregnancy varies from 2 to 7% and it depends on parity, race and socioeconomic status. If ASB is not treated, approximately 25% of women will subsequently develop acute symptoms of an infection during pregnancy. Detailed history of each case was taken regarding the name, age, address, socio-economic status, literacy, obstetric history, gynecological history, any symptoms related to urinary tract infection, history of recent antibiotic intake, past history of urinary tract infection, BOH, DM, HTN and any surgical intervention of the urinary tract (catheterization or any operation for abnormalities of the urinary tract). Out of the study population of 400 pregnant women, who were screened for ASB, 39 (9.75%) women had ASB and belonged to Group A. 361 (90.25%) did not have ASB and belonged to group B. Thus the incidence of group A is 9.75% and group B is 90.25%. Fifteen pregnant women had insignificant growth, hence included in group B.

**Keywords:** Pregnancy, UTI, ASB

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### **Introduction**

Urinary tract infection (UTI) is one of the most common bacterial Infections. It is the second most common bacterial infection seen during pregnancy <sup>1</sup>. UTI affects both sexes in all age groups, but women particularly in pregnancy are more susceptible than men. Due to short urethra easy contamination of urinary tract with fecal flora is

important among various other reasons <sup>2</sup>. The bacterial UTI can be symptomatic or asymptomatic <sup>3</sup>.

The symptomatic UTI can be uncomplicated or complicated. Uncomplicated UTI is symptomatic, characterized by frequency, urgency, dysuria, or supra pubic pain in a woman with a normal genitourinary tract <sup>4</sup>.

Complicated UTI, is also a symptomatic urinary infection in a women with functional or structural abnormalities of the genitourinary tract which involve either the bladder or kidneys <sup>5</sup>.

The asymptomatic UTI is a persistent, actively multiplying bacteria within the urinary tract without any symptoms of infection. The prevalence in pregnancy varies from 2 to 7% and it depends on parity, race and socioeconomic status <sup>6</sup>. If ASB is not treated, approximately 25% of women will subsequently develop acute symptoms of an infection during pregnancy <sup>7</sup>.

ASB is an entity with possibly serious consequences in the form of fetal and maternal morbidity. It can cause maternal anemia, acute pyelonephritis, recurrent infection <sup>8</sup>, preterm labour, septicemia and even death of the mother <sup>9</sup>. It can cause intrauterine growth retardation <sup>10</sup>, prematurity <sup>11</sup> and low birth weight of the fetus <sup>12</sup> and fetal mortality <sup>10</sup>.

Screening of asymptomatic subjects for bacteriuria is appropriate as bacteriuria has adverse outcomes that can be prevented by antimicrobial therapy. Apart from that, even the progression of the asymptomatic bacteriuria to the symptomatic UTI in the later life can be prevented, which emphasizes the fact that, “prevention is better than cure” as is believed from the time immemorial, which mandates early detection and treatment of asymptomatic bacteriuria, in pregnant women <sup>13</sup>.

## **Methodology**

### **Subjects**

Pregnant women visiting the antenatal clinic of the department of Obstetrics and Gynaecology.

**Type of study:** Cross-sectional study.

Study Period : Jan 2022 to March 2023.

### **Number of groups**

**Group A:** Positive for ASB.

**Group B:** Negative for ASB.

**Sample size:** 400 pregnant women

### **Inclusion criteria**

- 1) Pregnant women free from symptoms of UTI, like lower abdominal pain, fever, burning micturition, frequency of micturition and dysuria.
- 2) During first antenatal visit.

**Exclusion criteria**

- 1) Patients with symptoms of UTI.
- 2) Patients with history of UTI in the past one year or during this pregnancy.
- 3) Patients with diabetes, chronic hypertension and other preexisting medical disorders.
- 4) Patients who had taken antibiotics in last 6 months.
- 5) Patients on steroids.
- 6) Patients with hormonal imbalances.
- 7) Immunocompromised patients.

**History taking:** Detailed history of each case was taken regarding the name, age, address, socio-economic status, literacy, obstetric history, gynecological history, any symptoms related to urinary tract infection, history of recent antibiotic intake, past history of urinary tract infection, BOH, DM, HTN, and any surgical intervention of the urinary tract (catheterization or any operation for abnormalities of the urinary tract).

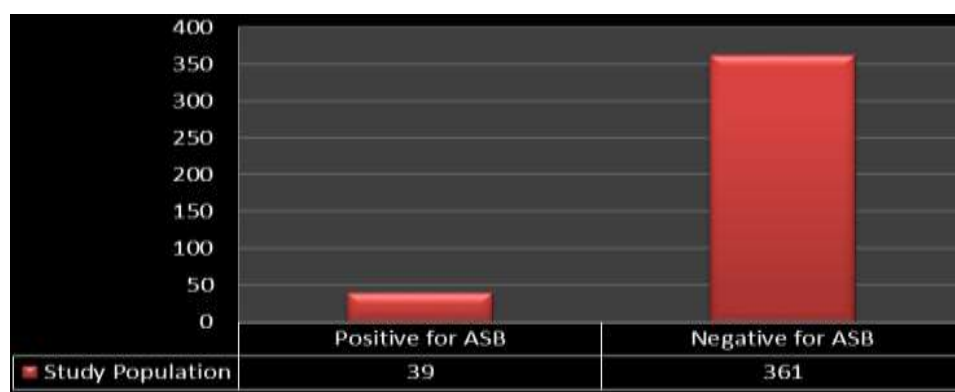
**Results**

Out of the study population of 400 pregnant women, who were screened for ASB, 39 (9.75%) women had ASB and belonged to Group A. 361 (90.25%) did not have ASB and belonged to group B.

Thus the incidence of group A is 9.75% and group B is 90.25%. Fifteen pregnant women had insignificant growth, hence included in group B.

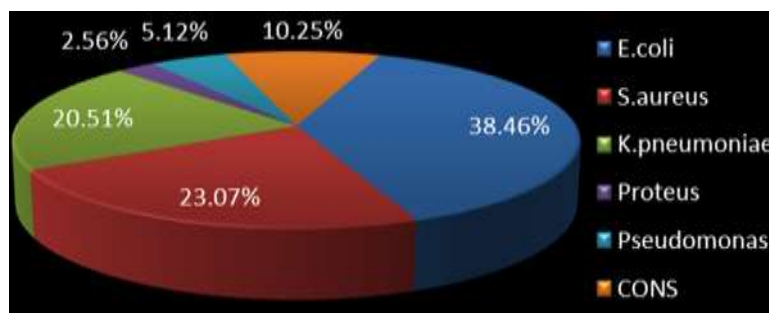
**Table 1:** Distribution of study population

Study Population	n=400 (%)
Group A (Positive for ASB)	39(9.75%)
Group B (Negative for ASB)	361 (90.25%)
Total	400 (100%)

**Bar diagram showing distribution of study population****Fig 1:** Study Population

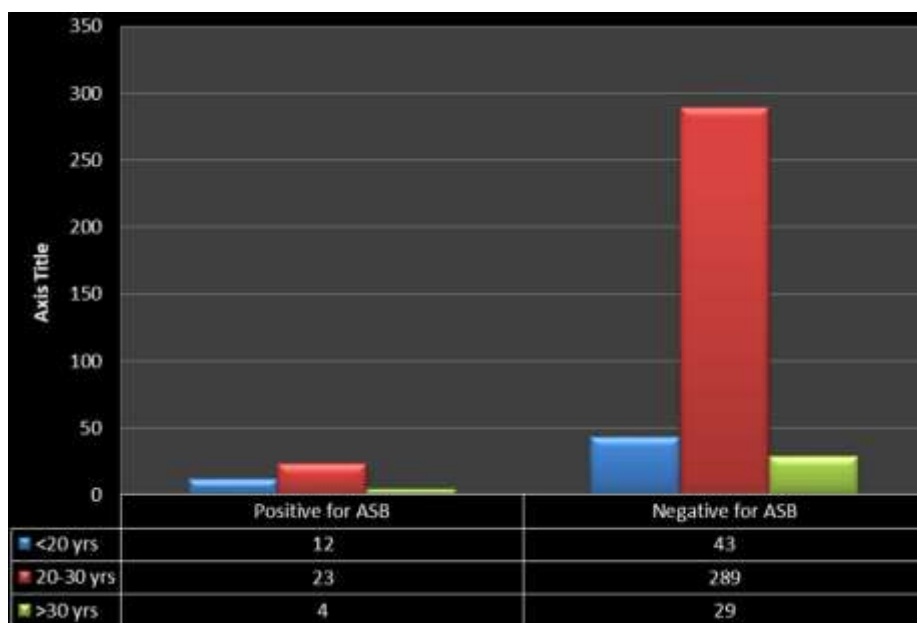
**Table 2:** Causative organism found in cases of ASB

Organism	Number	Percentage
Esherichia coli	15	38.46%
Staphylococcus aureus	9	23.07%
Klebsiella pneumoniae	8	20.51%
CONS	4	10.25%
Proteus	2	5.12%
Pseudomonas	1	2.56%
Total	39	100%

**Fig 2:** Causative organisms found in Group A**Table 3:** Maternal Age distribution

Age	Group-A	Group-B
< 20 YRS	12(30.76%)	43(11.91%)
20-30Yrs	23(58.97%)	289(80.05%)
>30yrs	4(10.25%)	29(8.03%)
Total	39	361

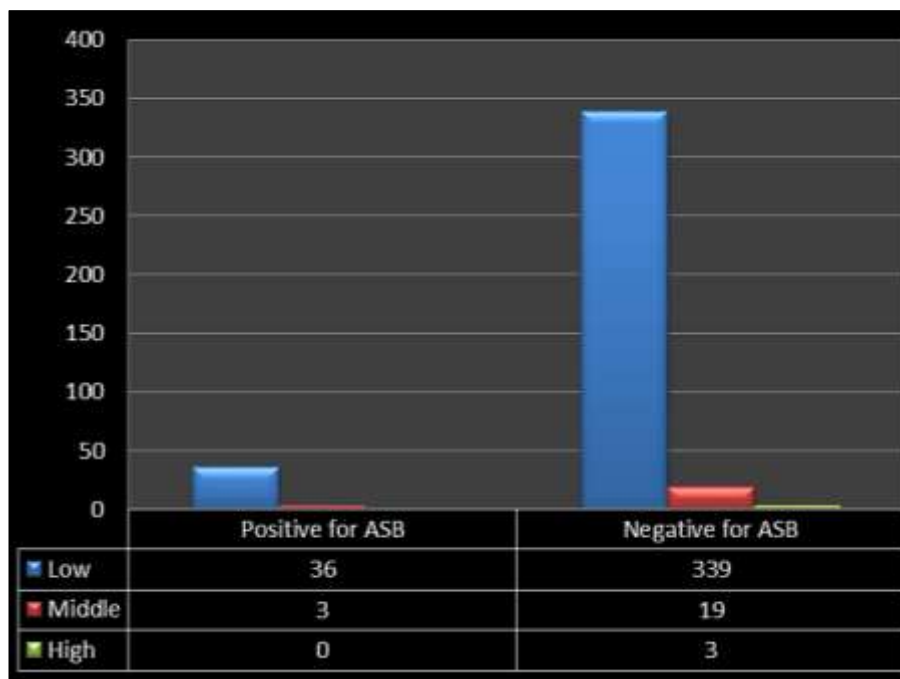
$X^2=11.3195$  and  $p\text{-value}= 0.003483$  ( $p<0.05$ ) highly significant.

**Fig 3:** Distribution of maternal age

**Table 4:** Distribution of Socio Economic Status

Socio Economic Status	Group-A	Group-B
Low	36(92.30%)	339 (93.90%)
Middle	03(7.69%)	19 (5.26%)
High	00 (00%)	03 (0.83%)
Total	39 (100%)	361 (100%)

$X^2=0.7113$  and  $p\text{-value}= 0.700714$  ( $p<0.05$ ) not significant.

**Fig 4:** Socio economic status**Table 5:** Distribution of Parity

Gravida	Group-A	Group-B
Primi	13 (33.33%)	30 (83.10%)
Multi	26 (66.66%)	331 (91.68%)
Total	39 (100%)	361 (100%)

$X^2 = 22.971$ ;  $P=0.0001$  ( $<0.05$ ) highly significant

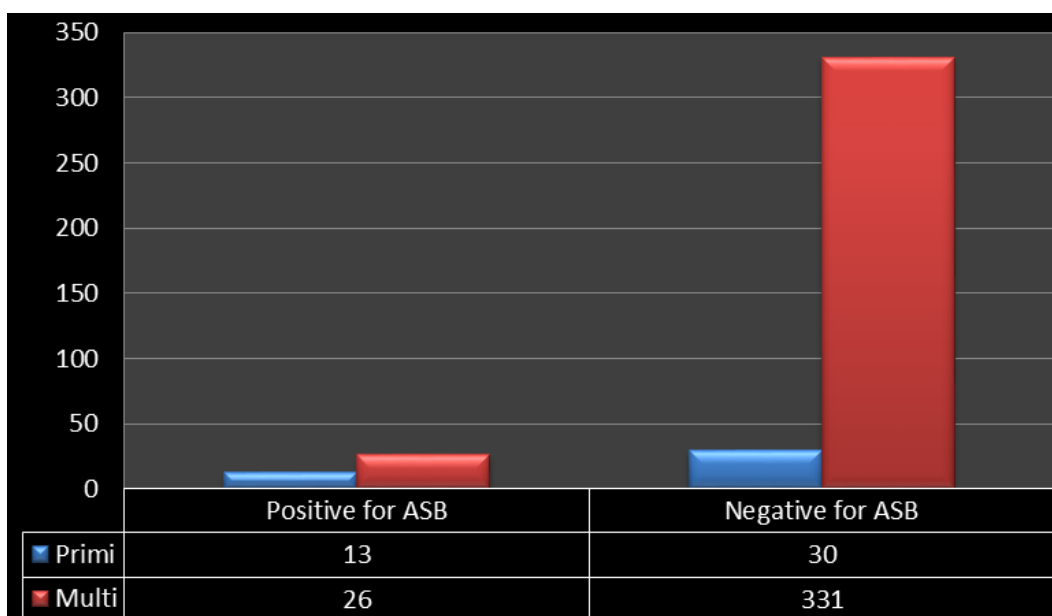


Fig 5: Distribution of parity

Table 6: Maternal morbidity in detail

Study population	Group-A1	Group A2	Group B
Preterm labour	1(5%)	3(20%)	19(5.75%)
PROM	1(5%)	3(20%)	11(3.33%)
Preeclampsia	0	1(6.66%)	6(1.81%)
PPROM	0	1(6.66%)	2(0.60%)
Without morbidity	18(90%)	7(46.66%)	292(88.48%)
Total	20	15	330

$X^2$  equivalent (Yate's) = 26.078;  $P=0.001018$  ( $<0.05$ ) highly significant

Table 7: Fetal Morbidity

Fetal morbidity includes Intra uterine growth retardation, low birth weight, premature delivery of baby and low APGAR score.

Fetal Morbidity	Group-A1	Group-A2	Group-B
With fetal morbidity	2 (10%)	7 (46.66 %)	27(8.18%)
Without fetal morbidity	18 (90%)	8(53.33%)	303(91.81%)
TOTAL	20 (100%)	15 (100%)	330(100%)

$X^2=43.3$ ;  $P=0.00001$  ( $<0.05$ ) highly significant

Table 8: Antimicrobial sensitivity

Antibiotics	Sensitive	Resistance
Nitrofurantoin	30 (76.92%)	09 (23.07)
Norfloxacin	28 (71.79%)	21 (28.20%)
Ampicillin	14 (35.89%)	25 (64.10%)
Cefpodoxime	31(79.48%)	8 (20.52%)
Cefixime	29(74.35%)	10 (25.65%)
Cefaperazone	22(56.75%)	17 (43.25%)

## Discussion

In the present study the prevalence of ASB is 9.75%. Different studies have shown varying incidences from 2-30% depending on the group under study like diabetes mellitus complicating pregnancy and methodology, though diabetes mellitus was excluded from the current study, Khatun *et al.* had 30% incidence in his study <sup>14</sup> and Masinde A *et al.* had 14.6% <sup>15</sup>.

**Table 9:** Comparison of Incidence

Study series (year)	Incidence percentage
Present study	9.75%
Nkwabong <i>et al.</i> (2014) <sup>16</sup>	7.8%
B. Prasanna <i>et al.</i> (2013) <sup>17</sup>	17%
Ade-Ojo IP <i>et al.</i> (2012) <sup>18</sup>	10.5%
R J girishbabu <i>et al.</i> (2011) <sup>19</sup>	10%
R Marahatta <i>et al.</i> (2010) <sup>20</sup>	9.8%
J Schnarr <i>et al.</i> (2009) <sup>21</sup>	5.1%
Priyadarsini Indira <i>et al.</i> (2004) <sup>22</sup>	10%

The percentage of ASB in the present study (9.75%) correlated with studies of R Marahatta *et al.* (2010) R J girishbabu *et al.* (2011) and Priyadarsini Indira *et al.* (2004).

The increased frequency of ASB in pregnant women is due to the physiologic and anatomic changes which predispose to urinary tract infection.

In the present study, culture positivity with significant bacteriuria was highest in 20 to 30 years age group (58.79%). This result correlated with the studies of Nkwabong *et al.* 2014, RJ Girishbabu *et al.* 2011 (60%) and Ade-Ojo IP *et al.* 2012 (72.4%). However, C. Obirikorang *et al.* 2012 (52.6%) and Nath G *et al.* 1996 found highest culture positivity with significant bacteriuria in  $\geq 30$  years age group. Lavanya SV *et al.* (2002) have reported highest culture positivity with significant bacteriuria in  $< 20$  years age group (71.42%). Hill JA *et al.* 1986 and Hoja WA *et al.* 1964 found that maternal age was not related to the frequency of bacteriuria.

The higher culture positivity with significant bacteriuria reported in 20-30 years age group in the present study may be due to relatively much larger sample size screened belonged to 20-30 years age group (because of random selection) and in 20-30 years age group, the sexual activity which is directly related to incidence of ASB, may be more.

## Conclusion

In our study, out of 400 randomly selected pregnant women, 39 were found to have ASB which gives a prevalence rate of 9.75%. Organisms isolated were *Escherichia coli*, *Staphylococcus aureus*, *Klebsiella pneumoniae*, *Coagulase negative staphylococci*, *Proteus* spp. and *Pseudomonas*. *Escherichia coli* was the most common organism in the study group accounting for 38.46%. All these organisms are capable of causing maternal and fetal morbidity. So if urine culture and sensitivity is done regularly in pregnant women, then there is chance of reducing the morbidity and

mortality of mother and fetus by prescribing her antibiotics according to the sensitivity patterns obtained and hence we can get healthy mother and healthy child.

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