

## Role of Routine Urine Culture in Predicting Asymptomatic Bacteriuria in Pregnancy in DMCH Obstetrics & Gynaecology Department

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### Abstract

**Background:** Pregnancy-related asymptomatic bacteriuria (ASB) might worsen and progress to pyelonephritis and sepsis. In addition to harming the mother, it also has an impact on the foetus by raising the prevalence of IUGR and preterm. The purpose of this study was to ascertain the prevalence of ASB and the importance of routine urine cultures in pregnant women who attended ANC (antenatal clinic).

**Materials & Methods:** 112 pregnant women who attended the ANC OPD in total were enrolled in the study over the course of six months.

### Inclusion criteria:

- All pregnant women who are present at the ANC OPD are free of fever and urine symptoms.

### Exclusion criteria:

- Frank UTI like symptoms (Fever, dysuria, increased frequency of urination)
- Any history of taken antibiotics.
- Any urinary anomalies.
- Renal calculi.
- Immune compromised patients (Like HIV, DM)
- Mid-stream urine sample was collected and subjected for both microscopy and culture sensitivity.

**Results:** Asbestosis was shown to be 17.85% prevalent, peaking at 55% in the second trimester. According to the study, a routine urine culture can accurately diagnose ASB. Escherichia coli was the most prevalent bacteria isolated (60%) and Nitrofurantoin was the most effective antibiotic. The text discusses the neonatal results. However, there were no neonatal deaths reported during the research period. Although there was no evidence linking asymptomatic bacteriuria to anaemia and pre-eclampsia, the odd ratio was greater than one.

**Conclusion:** This study demonstrates that ASB occurs often among expectant women. Regular urine cultures in ANC aid in the diagnosis of the illness, and quick ASB therapy can reduce mother and foetal mortality and prevent any obstetrical complications brought on by an ASB flare-up during pregnancy.

**Keywords:** ASB, IUGR, ANC, Foetal Mortality.

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## Introduction

ASB is frequent in pregnancy. Women become more susceptible to infection during pregnancy due to specific physiological changes. The presence of oestrogen and progesterone causes a 15% rise in plasma volume, increased bladder volume, dilatation of the ureters, and decreased tone in the ureters and bladder, which leads to stasis of the urine and bacterial growth. Pregnancy's weakened immune system speeds up the progression from asymptomatic bacteriuria to frank urinary tract infections, cystitis, pyelonephritis, and sepsis. Such prenatal complications increase the risk of preterm birth for the foetus. IUGR increased early newborn morbidity and its consequences [1].

All pregnant women have their urine frequently examined to check for the presence of protein and glucose. However the component of bacteriuria is disregarded. The lack of routine urine cultures at ANC is likely a result of the cost, lack of resources, and turnaround time for culture results (Usually 48 hours) [2-4].

Preferably, urinalysis with a culture strip is used to evaluate urine in pregnant women. However, a strip test cannot determine the severity of an infection or the causative organism's susceptibility to a particular antibiotic. Nonetheless, the results of our study highlight the importance of performing routine urine culture sensitivity tests on all pregnant women and identifying the incidence of ASB to better manage the condition's outcomes [5-7].

## Material and method

This was cross sectional study conducted in the DMCH, department of Obstetrics and Gynaecology.

### Inclusion criteria

- Any pregnant patients visiting the ANC OPD at any trimester who do not have

any co-morbid conditions like a fever, chills, dysuria, or a true UTI.

### Exclusion criteria

- Frank UTI
- Any history of taken antibiotics
- Renal calculi
- Immunocompromised patients (Like HIV, DM)

Patients histories were thoroughly recorded. Age, gravidity, parity, associated co-morbidities, family history of diabetes, HTN, and regular testing for Hb, HBsAg, HIV, HCV, and sugar in all patients were screened.

Each patient's clean, midstream pee was captured and placed in a sterile container. Using a calibrated drop of urine, this sample was cultivated in CLED (cystein lactose electrolyte deficient agar) media, and it was then incubated aerobically at 37°C for an entire night.

Significant infection was defined as colonies with a bacterial growth of 10<sup>5</sup> or more in pure isolation. Pus cells that were greater than 5 per HPT were also regarded important for infection.

Standard laboratory procedure was used to identify the isolated pathogen from culture plates. Using MMA agar, disc diffusion antimicrobial invitro susceptibility testing was carried out. Up to birth, the patients were followed. Preterm delivery was defined as occurring before 37 weeks. Low birth weight was defined as a birth weight of less than 2.5 kg. Preterm labour, PROM, PPRM, hypertension, preeclampsia, and anaemia were among the maternal outcomes.

Low birth weight, prematurity, preterm low birth weight, perinatal mortality, respiratory distress, pneumonia, and newborn death during the first 28 days were some of the prenatal outcomes studied in this study.

## Results

Table 1

Parameters		Absence of Bacteriuria	Presence of Bacteriuria
Age in Years	< 20	27 (24.1%)	08 (36.36%)
	20-25	47 (42%)	10 (45.45%)
	26-30	16 (14.2%)	02 (9%)
	31-35	12 (10.7%)	01 (4.5%)
	>35	10 (8.9%)	01 (4.5%)
Gravidity	Primigravida	64 (57.1%)	14 (63.6%)
	Multigravida	48 (42.8%)	08 (36.4%)
Trimester	First	35 (31.25%)	03 (13.6%)
	Second	49 (43.75%)	12 (54.6%)
	Third	28 (25%)	07 (31.8%)
H/o UTI	Yes	30 (26.78%)	12 (54.6%)
	No	82 (73.2%)	10 (43.45%)

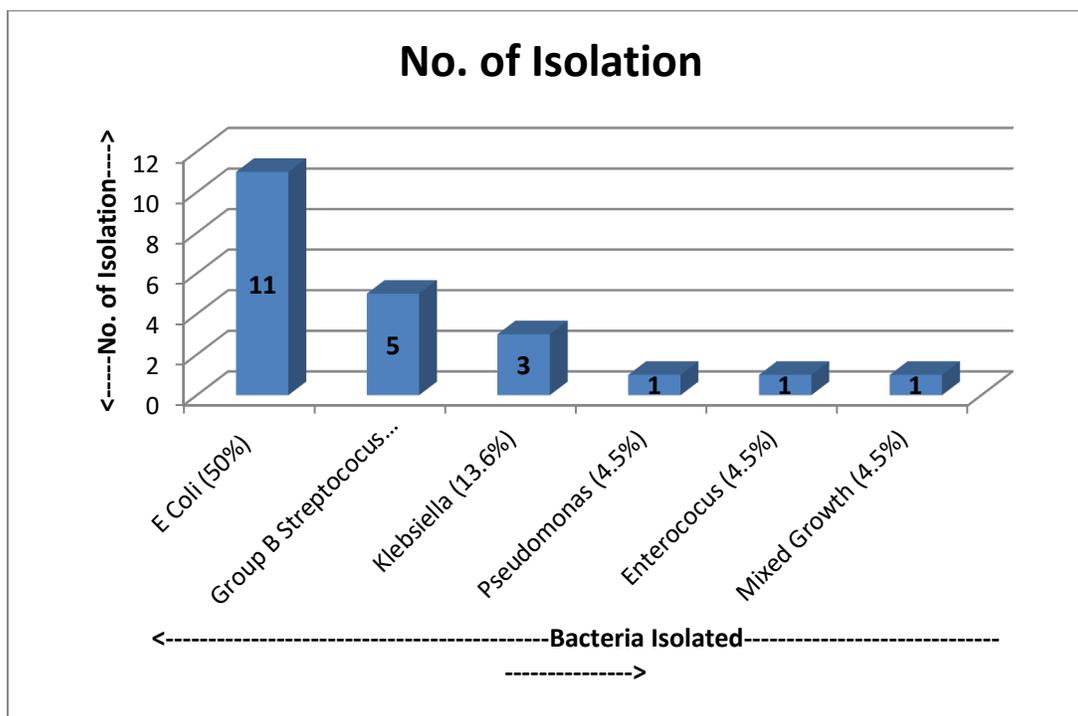


Figure 1: Prevalence of uro-pathogens

Pregnant women attending ANC at DMCH with ASB. 22 of the 112 pregnant women who were tested had noticeable growth in their urine sample. A prevalence rate that peaked in the second trimester at 17.85%. *Escherichia coli* 11 (54.5%) was the most prevalent bacterium found in culture, as shown in fig 1.

Following nitrofurantoin in susceptibility order were Amikacin and Ceftriaxone.

Table 2

Perinatal Outcome		Presence of Bacteriuria	Absence of Bacteriuria	Odds Ratio
Birth Weight	<2.5 Kg	10 (45.45%)	12 (10.7%)	6.94
	>2.5 Kg	12 (54.6%)	100 (89.2%)	
Gestational Age	<37 weeks	7 (31.8%)	10 (9%)	4.76
	>37 weeks	15 (68.2%)	102 (91%)	
Pre-eclampsia	Yes	5 (22.7%)	18 (16%)	1.53
	No	17 (77.2%)	94 (84%)	
Anaemia	Yes	4 (18.2%)	9 (8.03%)	2.54
	No	18 (81.9%)	103 (91.9%)	

Premature neonates and LBW newborns are more common in the asymptomatic population. During the research, there are no perinatal deaths. Pre-eclampsia and anaemia had odds ratios of 1.54 and 2.54, respectively. There was no clear correlation between anaemia and pre-eclampsia in ASB, with odds ratios exceeding one.

## Discussion

Asymptomatic bacteriuria is defined as the presence of 10<sup>5</sup> bacteria per millilitre of urine without any accompanying symptoms in the patient, such as fever, dysuria, or polyuria. About 30% of people with untreated ASB during pregnancy have symptomatic cystitis, and 50% develop pyelonephritis. The risk of IUGR and LBW was raised by ASB. ASB is very common during pregnancy. Pregnant women should be screened for bacteriuria in order to prevent serious side effects of pregnancy. The largest number of occurrences, or 10% (45.45%), occurred in the age range of 21 to 25. With primigravida, the incidence of ASB was significant (63.6%). In the second trimester of pregnancy, there was a higher rate of infection detection (54.6%). Urine culture is the gold standard for detecting bacteriuria, but the test is expensive and time-consuming to perform. Leucocyte esterase dipstick, nitrite dipstick urinalysis, and urine gramme staining have all been tested for their accuracy as quicker screening methods. Around 50% of the isolates were *E. coli*, and group B streptococcus was the second most prevalent group [8,9].

Premature labour, hypersensitivity condition of pregnancy, anaemia, PROM, and PPRM were all linked to ASB. To improve the results for the foetus and the mother, all pregnant women should be checked for bacteriuria and then given the proper antibiotic therapy.

## Conclusion

The prevalence of asymptomatic bacteriuria in pregnant women, according to the current study, is 17.85%. The study emphasises how screening for asymptomatic bacteriuria with urine culture as part of standard prenatal care can avoid any obstetric complications and lower mother and foetal morbidity. Antibiotic policies must be understood and adhered to in order to avoid the reckless use of antibiotics that has led to bacterial resistance. A vital component of good health care is good personal cleanliness.

## References

1. Almushait M, Mohammed H, Al-Harthy D, Abdullah A. Prevalence and Predisposing Factors of Urinary Tract Infections among Pregnant Women in Abha General Hospital International

- Journal of Sciences: Basic and Applied Research (IJSBAR). 2013;11(1): 18-29.
2. Chandel L.R, Kanga A, Thakur K, Mokta K. K, Sood A, Chauhan S. Prevalence of Pregnancy-associated Asymptomatic bacteriuria: A study was done in a tertiary care hospital. J Obstet Gynecol India. 2012; 62:511-4.
  3. Delzell JE, Jr, Leferre ML. Urinary tract infections during pregnancy. Am Fam Physician. 2000;61(3):713–721.
  4. Emiru T. G, Beyene W, Tsegaye and Melaku, S. Associated Risk Factors of Urinary Tract Infection among Pregnant Women at Felege Hiwot Referral Hospital, Bahir Dar, Northwest Ethiopia. 2013: BMC Res Notes, 25(6): 292.
  5. Kazemier BM, Koningstein FN, Schneeberger C, Ott A, Bossuyt PM, de Miranda E, *et al.* Maternal and neonatal consequences of treated and untreated asymptomatic bacteriuria in pregnancy: a prospective cohort study with an embedded randomised controlled trial. Lancet Infectious Diseases 2015; 15(11): 1324-33.
  6. Michelim L, Bosi G.R, & Comparsi E. Urinary Tract Infection in Pregnancy: Review of Clinical Management. J Clin Nephrol Res. 2016; 3(1): 1030.
  7. Scott JR, Whitehead ED, Naghes HM. Dan Forty Obsetrics and Gynaecology. 6th ed. Boston: McGraw Hill; 1990;60–80.
  8. Sobel JD, Kaye D. Urinary tract infections. In: Mandell, Douglas, and Bennett's Principles and practice of infectious diseases, 7, Mandell GL, Bennett JE, Dolin R (Eds), Elsevier, Philadelphia 2010. Vol 1, p.957.
  9. Tadesse S, Kahsay T, Adhanom G, Kahsu G, Legese H, G/Wahid A, *et al.* Correction to: prevalence, antimicrobial susceptibility profile and predictors of asymptomatic bacteriuria among pregnant women in Adigrat General Hospital, Northern Ethiopia. BMC Res Notes. 2018 Oct 19;11(1):798.