



Asymptomatic Bacteriuria, Prevalence Report during Antenatal Period at PUMHSW Nawabshah, Pakistan

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Authors' contributions

This work was carried out in collaboration among all authors. Author SAS designed the study, performed the statistical analysis, wrote the protocol and wrote the first draft of the manuscript. Authors BMT, ABD, KP, FRM, SB and AA managed the analyses of the study and managed the literature searches. All authors read and approved the final manuscript.

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ABSTRACT

Objective: The aim of study is the determination of prevalence of asymptomatic bacteriuria during antenatal period in PUMHSW, with prevalence of antenatal asymptomatic bacteriuria in neighboring countries.

Methodology: This study is Cross Sectional-Prospective, and conducted at the Department of Pathology Peoples University of Medical & Health Sciences (PUMHS) for Women Nawabshah (Shaheed Benazir Abad). All the samples (417) were obtained from the pregnant women attending the Outpatient Department of Gynecology and Obstetrics PUMHS Hospital Nawabshah. All mid-stream clean catch collected urine sample in sterile container processed for urine detailed report

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(physical, chemical and microscopic examination). All the demographic details were entered and analyzed by SPSS 20. More than 8 international as well as national databases were searched to the year 2020, consisting of Google, Pub-med, Science Direct, Web of Science, Medline. The data obtained were analyzed and their results reported with a random-effects model with confidence level 95%.

Result: Out of 417 patients the mean age of the pregnant female was 29.32 ± 5.74 years. There were females with mean parity of 2.66 ± 2.42 and mean gestational age was 25.84 ± 11.80 . Age when compared with asymptomatic bacteriuria revealed statistically significant value p value 0.000 with an increased incidence seen among age group of 26-30 yrs $n=33(44\%)$. The total prevalence of asymptomatic bacteriuria (ASB) was $83(19.9\%)$. Age when compared with asymptomatic bacteriuria revealed statistically significant value p value 0.000 with an increased incidence seen among age group of 26-30 yrs.

Conclusion: Asymptomatic bacteriuria during pregnancy is increasingly found in younger age women, with increasing gestational age. Therefore urine cultures during antenatal period should be done to diagnose asymptomatic bacteriuria in order to make preventative planning and control of asymptomatic bacteriuria among pregnant women.

Keywords: Urinary tract infection; antenatal; asymptomatic bacteriuria.

1. INTRODUCTION

A most common health issue the Urinary tract infection or UTI in human being affecting both males and females, but females are more prone to develop urinary UTI when compared with males as the urethra is wide and short in females, resulting in easier communication of faecal microorganisms with urinary tract, pregnancy, lack of prostatic secretions, and repeated trauma due to sexual activity [1].

One in every third women during childbearing age experiencing UTI, could be symptomatic or asymptomatic [2]. The term ASB is used to describe a state in which bacteria are present in significant counts in the properly collected urine of a person without apparent symptoms of UTI [3].

The association of antenatal asymptomatic bacteriuria is ended with untoward pregnancy outcome, as well as may cause symptomatic UTI during pregnancy, which may result in adverse materno- fetal health outcomes [4].

During pregnancy there is high risk of urinary tract infection starting from 6th week and reaching at peak level during 22nd to 24th week. Approximately 90% women during pregnancy develop dilatation of urethra with decreased urethral tone and increased urinary bladder volume with decreased tone causes stasis of urine and retrovesical reflex [5]. In pregnant women concentration of urine decreased due to increase in plasma volume, it is physiological process which causes glycosuria

and favors growth of bacteria in urine [6]. Also due to decline in immunity during pregnancy favor the growth of normal habitat and exogenous microorganisms of urinary tract [9]. Untreated bacteriuria may lead to develop urethritis, cystitis, pyelonephritis, pre-eclampsia and cause 70 adverse obstetric outcomes [7-9].

When compared the reported prevalence of antenatal asymptomatic bacteriuria with symptomatic UTI is 2% to 15% respectively [10]. ASB is defined as the presence of bacterial organisms more than 10^5 per ml of urine, in a midstream of properly collected urine sample, without symptoms organisms, with a positive urine culture growth [11]. There is increasing risk of ASB and symptomatic bacteriuria in pregnancy due to several hormonal and anatomical changes such as pressure of gravid uterus on ureters and urinary bladder which causes bacteriuria due to stasis of urine and reduced immunity [12]. Silent antenatal asymptomatic bacteriuria if not treated timely may progress to severe adverse obstetric and renal outcomes [13]. The estimated prevalence of antenatal asymptomatic bacteriuria is in between 1.9-15% [10]. The major number of reports from developing countries showing similar rates of prevalence [3]. The higher prevalence rates are observed in the studies from Nigeria [14]. The prevalence in other parts of world is as 12.4% in Pakistan [15], 7.32% in Ghana [16], 4-7% in Canada [17], 7% in Ethiopia [18] Ethiopia 19.9 [19].

In some cases, asymptomatic bacteriuria in pregnant women is caused by uncommon

bacteria included *Mycoplasma genitalium* or *Chlamydia trachomatis* [20].

2. MATHEDOLOGY

The study type is Cross Sectional-Prospective, and conducted at the Department of Pathology Peoples University of Medical & Health Sciences (PUMHS) for Women Nawabshah (Shaheed Benazir Abad). The 417 Samples were collected during routine antenatal visits from the pregnant women attending the Outpatient Department of Gynecology and Obstetrics PUMHS-W Hospital Nawabshah during 2015-20. The patient did not present with any clinical symptom of urinary tract infection. Patients were advised to collect midstream urine sample of 10-15 ml in a sterile container after cleaning their perineal region under the observation of a midwife. The specimen was processed for physical, chemical, microscopic examination and culture on the blood agar, CLED agar and Mac Conkey's agar. On the basis of culture results, sample was further processed for gram staining, biochemical tests and antibiotic sensitivity on Mueller Hinton agar according to standardized methods. All the demographic details were entered and analyzed by SPSS 20. More than 8 national and international studies were searched up to 2020, by google, Elsevier, Web of Science, Med Sci, Medline, Pub-med. The collected data were analyzed and the results were documented using a random-effects model with confidence level 95%.

3. RESULTS

Out of 417 the positive cases were 83 (19.9%) patients, mean age is 29.32 ± 5.74 years. There are 19.9% of the participants are suffering from asymptomatic bacteriuria in our study Table 1.

The age groups in our study were 5 in number the higher frequency were noticed in 26-30 years of age group, which is 44% and the lower most frequency 7% were noticed in between 41-45 years age group. As the gravidity is concerned the most common group in which 72% were involved are multigravida and the least common group were primigravida Table 2.

When comparing our results with our neighboring countries and with other parts of world the available data of other countries from different internet resources the highest percentage was

noticed in Nepal which is 42% and the lowest frequency seen in one Indian study which was 6.4%. Saudi Arabia, Bangladesh, Egypt and another study in Pakistan has 14.25%, 10.2, 10%, 9% respectively while a study from Ethiopia shows 19.9% of cases Table 3.

4. DISCUSSION

In our study the prevalence of asymptomatic bacteriuria was 19.9%, The same results were seen in study carried out at Ethiopia [19]. The results from a study carried out at Visakhapatnam, India by SV Lavanya the prevalence recorded was 8.4% [21]. The prevalence of ASB eastern Saudi Arabia [4] was 14.25%, this frequency is close to the frequency of our study. In Nepal study by Yadav [22] the prevalence was 42% [16] a very high frequency, 7.3% of cases were recorded from another city of India Kanpur [23], Goyal [11] from Amritsar India document the prevalence was 15.6% and the prevalence 10.2% was recorded in Bangladesh a study carried by Jubaida [24]. The total recorded frequency of ASB in Egypt [25] was 10%. Another study at Andhra Pradesh India shows the prevalence of ASB 6.4% [26].

In Iran [27] a met analytic study shows the prevalence of significant ASB was 13%, in another study carried out at Katmandu Nepal by tripti [28] the prevalence was 7.1%. In US the prevalence of ASB despite the routine antenatal screening was 7% [29].

In our study the prevalence was 19.9 which is not as high as seen in Nepal by Yadav [22] which is 42%, but the lower prevalence seen is in Ghana 5.5% Brunei Drusalam 4.1% [30], and 3.7% were seen in Uganda. The lower most prevalence rate of 1.9%, was seen in a study done at Malaysia by Mohammad M [31].

The risk of ASB is seen in between 26-30 years of age seen in our setup 44% of the pregnant women has had ASB, similar results were seen in Egypt [25] where the higher percentage were seen in between 20-30 yrs of age.

The parity has also an influence in occurrence of ASB, 72% cases were seen in multiparous women, same results were seen at Ghana 64.2% [32].

Table 1. Frequency of asymptomatic bacteriuria in antenatal period at Nawabshah

Prevalence of Asymptomatic Antenatal Bacteriuria In Nawabshaha			
S.NO	Number of cases	Positive	Percentage
1.	417	83	19.9%

Table 2. Age, Gravidity and ASB wise distribution

Age, Gravidity and ASB	
Risk factors	Asymptomatic bacteriuria
AGE	N=83
17-25yrs	17 (20%)
26-30yrs	37 (44%)
31-35yrs	08 (10%)
36-40yrs	15 (18%)
41-45yrs	06 (07%)
PARITY	
Primigravida	09 (11%)
Para-1	14(17%)
Multipara	60 (72%)

Table 3. Prevalence of antenatal asymptomatic bacteriuria in different countries

Prevalence Of Asymptomatic Bacteria (Meta-Analysis)	
Place	FREQUENCY
Nawabshah	19.9%
Nepal	42%
Saudi	14.25%
Ethopia	19.9%
Bangladesh	10.2
Egypt	10%
Pakistan	9%
Iran	13%
United States	7%
India	6.4
Brunei	4.1
Malasya	1.9
United Arab Emirates	4.8%
Uganda	3.75
Ghana	5.5%

5. CONCLUSION

The 19.9% of our pregnant female population is at risk of progression to symptomatic acute bacterial urinary tract infection if not treated on time.

The results of different studies on prevalence of asymptomatic bacteria between different regions/countries of world is variable. Despite antenatal screening for ASB at few countries the variability may concerned to the age, gestational age, parity, socioeconomic status, sexual activity and availability of nursing/health care.

The total recorded number of ASB among pregnant women is noticeable in Nawabshah and among the neighboring countries as well, therefore the preventive measures and planning for its control due to the resulting materno-fetal complications are required and implemented on urgent basis by health care units at required setups.

CONSENT AND ETHICS APPROVAL

Ethical Review Committee of PUMHSW gave the approval to conduct the study. After written informed consent from pregnant women on designed proforma for this study.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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