

# Asymptomatic Bacteriuria in Children – A Cross Sectional Study

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DOI: [10.21276/sjpm.2019.4.4.8](https://doi.org/10.21276/sjpm.2019.4.4.8)

**| Received:** 12.04.2019 **| Accepted:** 22.04.2019 **| Published:** 30.04.2019

## Abstract

Asymptomatic bacteriuria spans all age groups from neonates to elderly. It is much more common in boys during first three months often in association with urologic abnormalities. During preschool years it is common in girls than boys. Presence of bacteriuria in childhood defines a population at higher risk for development of bacteria in adulthood [1]. The present study was carried out in Department of Microbiology, in a tertiary care hospital, over a period of one year from Jan 2016 – Dec 2016. A total of 100 children of all age groups and both sexes were selected for this study. In the present study sample size was equally divided among male and female. ABU +ve came in 7 male children's, out of which 3 cases were belongs to 6-10 years age group, 4 cases belongs to 11-18 years of age group. ABU +ve came in 11 female children's, out of which 6 cases were belongs to 6-10 years age group, 5 cases belongs to 11-18 years of age group. Recent advances in research support considering ABU a separate entity from symptomatic UTI. Furthermore, in contrast to historical recommendations, recent evidence demonstrates there is minimal benefit and potential harm associated with the treatment of ABU. The current recommendation is not to treat ABU in the pediatric population, with the exception of renal transplant recipients and children undergoing urologic procedures.

**Keywords:** Asymptomatic bacteriuria, childrens.

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## INTRODUCTION

Asymptomatic bacteriuria spans all age groups from neonates to elderly. It is much more common in boys during first three months often in association with urologic abnormalities. During preschool years it is common in girls than boys. Presence of bacteriuria in childhood defines a population at higher risk for development of bacteria in adulthood [1].

Once adulthood is reached prevalence of asymptomatic bacteria increases in the female population. Upto 40 to 50% of female population will experience asymptomatic bacteriuria at some times during their life [2]. Among young adults bacteriuria is thirty times more frequent in women than men. As a result of anatomic and hormonal changes that favour development of UTIs, the incidence of bacteriuria increases during pregnancy [3].

Although patients with asymptomatic bacteriuria may have pyuria, the magnitude of the inflammatory response is not sufficient to make them symptomatic. It may be the consequence of bacterial attenuation by the host or a primary condition in which bacteria of low virulence stably colonize the

urinary tract without causing symptomatic response. The bacterial and host factors responsible for this phenomenon are unknown [4]. Using ureteral catheterization it has been shown that approximately 50% of women with asymptomatic bacteriuria had infection in their upper urinary tract [5].

Most common agents causing asymptomatic bacteriuria are gram negative bacilli. *Escherichia coli*, a normal flora of the gastrointestinal tract is the commonest causative organism. Other gram negative colonic bacteria like *Proteus* and *Klebsiella* species and occasionally *Enterobacter* species account for a smaller proportion of uncomplicated infections. Gram positive cocci play a lesser role [6].

Bacteria gain access to the urinary tract by the ascending route, the hematogenous route and lymphatic pathways. Once established in the bladder, bacteria may ascend the ureters caused by intraluminal infection, an inflammation of genitourinary tract musculature.

## OBJECTIVE

To study the prevalence of asymptomatic bacteriuria in children

## METHODOLOGY

### Source of Data

The present study was carried out in Department of Microbiology, DR B R AMBEDKAR MEDICAL COLLEGE, BENGALURU, over a period of one year from Jan 2016 – Dec 2016. A total of 100 children's of all age groups and both sexes were selected for this study.

### Inclusion criteria

- Both male and female healthy childrens of all age groups and both sexes were selected for this study.

### Exclusion criteria

- Students suffering from UTI

- Students on medication

### Specimen Collection

Midstream urine sample from male and female healthy children were collected in a wide mouthed universal container with a secure lid. A proper instruction was given to the children regarding the method of collection of midstream urine sample.

## RESULTS

A total of 100 childrens of all age groups and both sexes were selected for this study.

In the present study sample size was equally divided among male and female.

**Table-1: Age and Sex wise distribution of cases**

Age group (years)	Male		Female		Total	
	No.	%	No.	%	No.	%
6-10 years	25	25	25	25	50	50
11-18 years	25	25	25	25	50	50
Total	50	50	50	50	100	100

**Table-2: Age and sex wise distribution of asymptomatic bacteriuria**

Age group (years)	Male		Female		Total	
	No.	ABU +ve	No.	ABU +ve	No.	ABU +ve
6-10 years	25	3	25	6	50	9
11-18 years	25	4	25	5	50	9
Total	50	7	50	11	100	18

In the present study, ABU +ve came in 7 male children's, out of which 3 cases were belongs to 6-10 years age group, 4 cases belongs to 11-18 years of age group. ABU +ve came in 11 female children's, out of which 6 cases were belongs to 6-10 years age group, 5 cases belongs to 11-18 years of age group.

## DISCUSSION

In the present study sample size was equally divided among male and female. ABU +ve came in 7 male children's, out of which 3 cases were belongs to 6-10 years age group, 4 cases belongs to 11-18 years of age group. ABU +ve came in 11 female children's, out of which 6 cases were belongs to 6-10 years age group, 5 cases belongs to 11-18 years of age group.

A study conducted in K.E.M hospital Parel, Mumbai on healthy children between ages of 5 to 10 years showed bacteriuria in 2.1% girls and 0.8% boys. Over all incidence was 1% for all school children. 1000 school children between the ages of 5 and 10 years were screened for asymptomatic bacteriuria. These were healthy children attending the school regularly. There were 190 girls and 810 boys. Dip slide method was used for urine cultures and

Griess nitrite test was also carried out on all urine samples. 4 out of 190 girls and 7 out of 810 boys showed asymptomatic bacteriuria giving an incidence of 2.1% for school girls and 0.8% for school boys and an overall incidence of 1.1% for all school children. Escherichia coli was the commonest organism isolated followed by Klebsiella results with the Griess nitrite test were discouraging. Plain X-rays of abdomen did not reveal any abnormality of urinary tract. 4 out of 11 cases were followed up for a period of 6 months. None of them developed overt renal disease in the follow up period [7].

In another study on 1817 school children aged 11 to 15 years from different schools in Mangalore, asymptomatic bacteriuria was observed in 192 cases (10.57%) with female (72.4%) preponderance over males (27.6%). The major urinary isolates were Escherichia coli (32.8%), followed by Klebsiella pneumoniae (22.4%) and Staphylococcus aureus (15.1%). Student who were suffering from urinary tract infection were not included in the study. The study group comprised of 563 boys and 1354 girls. Before each school visit, care was taken to notify the headmaster/mistress and other staff about the investigation to be carried out. The total student population available for screening was identified from the class register. Results of this

study showed that bacteriuria among school children, especially girls, rarely led to end stage renal failure, it is not benign and it would not be ignored. It may be the first clue to the important underlying anatomical abnormalities in some patients. The girls with bacteriuria had more recurrent infection and urological abnormalities and were at high risk of developing bacteriuria during pregnancy [8].

A study was conducted among students of university of Port Harcourt. Urine samples collected from 50 males and 50 females, showed significant asymptomatic bacteriuria, which was higher in females (60%) than males (40%). Organisms isolated were *S.aureus*, *S.epidermidis*, *E.coli*, *Pseudomonas* spp and *Proteus* spp [9]. One hundred students of University of Port-Harcourt demonstration secondary school (UDSS) within the age range of 10-17 years were sampled for asymptomatic bacteriuria. Fifty were boys and fifty were girls. Prior to sample collection, questioners were given to the students.

A study done in New castle upon Tyne among 13464 school girls aged 4 to 18 years showed an overall prevalence of 1.9% asymptomatic bacteriuria [10]. In girls aged 4-6 years it was 1.4%, in girls aged 7-11 years it was 2.5%, and in girls aged 12-18 years it was 1.6%, a statistically significant rise and fall. Renal scarring was found in 39(15%) of 254 girls with asymptomatic bacteriuria. Neither the prevalence nor the severity of renal scarring increased with age. There was no association between asymptomatic bacteriuria and social class of the 254 girls with ASB, 24% had no symptoms. Infections with *Klebsiella* were more frequently associated with renal scarring than the infections with *E coli*.

## CONCLUSION

Recent advances in research support considering ABU a separate entity from symptomatic UTI. Furthermore, in contrast to historical recommendations, recent evidence demonstrates there is minimal benefit and potential harm associated with the treatment of ABU. The current recommendation is not to treat ABU in the pediatric population, with the exception of renal transplant recipients and children undergoing urologic procedures.

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