

## An Assessment of the Factors of Recurrent Urinary Tract Infection in Children

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Recurrent urinary tract infections (UTI) are problems that are frequently encountered by paediatric healthcare providers. Over recent decades, the importance of UTI has been increasingly recognized and UTIs are considered as occult cause of febrile illness in young children. It was a descriptive cross-sectional study conducted in Dhaka Shishu Hospital during the period from May 2018 to August 2018. One Hundred and Three (103) samples size was selected by applying a purposive sampling technique. This study was conducted on recurrent cases only. Based on educational status of the respondents 6.80% had illiterate, 52.43% had primary level educated, 29.13% had secondary level educated, 9.71% higher secondary level educated and 1.94% had bachelor/post graduate degree. It is declared that based on main profession of the respondents, 24.27% was house wife, 16.50% was in agriculture, 17.48% was day labor, 21.36% was in business and 20.39% was service holder. Based on monthly family income of the respondents, large ratio (42.72%) of them was within 30001.00 to 60000.00 taka, second large ratio (35.92%) was within 60001.00 to 90000.00 taka, followed by 13.59% was within 30000.00 taka and 7.77% was above 90001.00 taka. The maximum, minimum and mean ( $\pm$ SD) income of the respondents were 110000.00 taka, 18000.00 taka and 58407.77 ( $\pm$ 22276.532) taka. It is found that, 78% of respondents lived in nuclear family, 8.74% of respondents lived in joint family and 5.82% of respondents lived in extended family. Among them 100% respondents were married during the study period. According to knowledge on UTI among the respondents 73.79% parents knew about this disease where 26.21% parents did not know. Maximum duration of suffering from Urinary Tract Infection (UTI) was 10 days with a mean of 4.3 days and a standard deviation of 2.25 days. It is revealed that, awareness on Urinary Tract Infection (UTI) study population were distributed by 44.66% excellent knowledge, 29.13% good knowledge, 14.56% poor knowledge and 11.65% very poor knowledge. It is revealed that, 96.12% children had experienced on UTI and 3.88% had not. 13.59% of children suffered in one time, 21.35% of children suffered in two times and 65.06% suffered in several times by UTI in their life span. It is found that, according to condition of toilet safety study population were distributed by 24.27% excellent condition of toilet, 38.83% good condition of toilet, 20.39% poor condition of toilet and 16.51% very poor condition of toilet. It is noticed that, according to sign-symptom study population were distributed by 74.76% children had Vesico Ureteral Reflex (VUR) besides 25.24 had not, 49.51% children had Prophylactic Antimicrobial Exposure besides 50.49% had not that exposer. It was found that, 100% children had been taken treatment from Dhaka Shishu Hospital during the study period. The following figure shows that, study population were satisfied by provided services from Dhaka Shishu Hospital as 43.69% excellent, 36.89% good, 11.65% poor and 7.77% very poor; and behavior of health professional as 40.77% excellent, 41.75% good, 9.71% poor and 7.77% very poor. Community based training by the health service department and community-based organization (CBO) can help to develop knowledge on UTI. Changing life style can develop good health behavior and drinking of much safe water could care for UTI.

**Key words:** Urinary Tract Infection (UTI), Factors, Asymptomatic Presence of Bacteria.

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## INTRODUCTION

Urinary tract infection (UTI) is a problem that is frequently encountered by paediatric healthcare providers. Over recent decades, the importance of UTI has been increasingly recognized and UTIs are

considered as occult cause of febrile illness in young children. It was a descriptive cross-sectional study conducted in Dhaka Shishu Hospital, Dhaka, Bangladesh during the period from May 2018 to August 2018. One Hundred and Three (103) samples size was selected by applying a purposive sampling technique.

This study was conducted on recurrent cases only. Although UTIs do not occur with as great a frequency in children as in adults, they can be a source of significant morbidity and mortality in children. For reasons that are not yet completely understood, a minority of UTIs in children progress to renal scarring, hypertension and renal insufficiency [1]. Clinical presentation of UTI in children may be nonspecific and the appropriateness of certain diagnostic tests remains controversial. Studies have shown that UTI may often be missed on history and physical examination and the decision to screen for UTI must balance the risk for missed infections with the cost and inconvenience of testing. Interpretation of rapid diagnostic tests and culture is complicated by issues of contamination, false test results, and asymptomatic colonization of the urinary tract with nonpathogenic bacteria [1]. Urinary infection is a frequent event in the pediatric population, which occurs in approximately 1% of boys and up to 3% of girls in school age. Urinary tract infection in the childhood is always regarded as complicated; due to the high number of associated abnormalities and to the high risks of irreversible renal lesion in cases where the treatment is delayed. Even though the treatment for urinary tract infection is extremely effective, recurrence is frequent, and occurs in approximately 40% in females and 32% in males, following a first episode of infection. This high recurrence index can be due to several factors, among them the development of bacterial resistance to the antibiotic, insufficient dosing and period of medication, low immunity and persistence of the etiologic factor [2]. Urinary tract infection (UTI) is the most commonly diagnosed bacterial infection of childhood and has a significant healthcare impact. Renal parenchymal infection and scarring are well-established complications of UTI in children and can lead to renal insufficiency, hypertension and renal failure. Although frequently encountered and well researched, diagnosis and management of UTI continue to be a controversial issue with many challenges for the clinician. The evolving state of knowledge about pediatric UTI leaves many questions and controversies. The goal of this chapter is to provide an up-to-date summary of the literature with particular attention to practical questions about diagnosis and management for the clinician [3]. Urinary tract infections (UTIs) are a common and important clinical problem in childhood and may lead to systemic illness and renal injury in the short term; with repeated infections, renal scarring, hypertension, and end-stage renal dysfunction may develop. The overall prevalence of UTI is estimated at 5% in febrile infants but varies widely by race and gender. The highest prevalence rates of childhood UTI occur in uncircumcised male infants under 3 months of age (prevalence, 20%), and among females (prevalence, 8%). Uncircumcised older male children have the lowest prevalence of UTI (1%) [4]. This study aims to find out the factor of recurrent urinary tract infection among the children at Dhaka Shishu Hospital in Dhaka city of Bangladesh

## Objectives

### General objective

To identify the factors of recurrent urinary tract infection among children in Bangladesh

### Specific Objectives

To assess the awareness of parents about recurrent urinary tract infection in Bangladesh  
To assess the socio-demographic status of the respondents

## MATERIALS AND METHODS

It was a descriptive cross-sectional study conducted in Dhaka Shishu Hospital, Dhaka, Bangladesh during the period from May 2018 to August 2018. Parents of children experienced UTI and willing to face to face interview to the interviewer and participate to fill up the prescribed questionnaire. Including girls and boys, admitted in the Dhaka Shishu Hospital, Dhaka, Bangladesh. One Hundred and Three (103) samples size was selected by applying a purposive sampling technique. Data collection was done by face to face interview in the community of the participants. Investigators were involved in data collection in scheduled time. Researcher was trained up about check list of data collection standard, methodology, techniques and ethics before starting of data collection. Semi-structured questionnaire as a tool was used for data collection. A sample pretest had done to collect the data before finalization of tool. After completion the pretest the final interview was done. The collected data was analyzed using the computer software known as Statistical Package for Social Sciences (SPSS 21.0) and MS Excel. The analyzed data were presented in tables, graphs, pie charts and bar charts; descriptive statistics used for the interpretation of the findings. Cross tabulation and association determined. The qualitative information were analyzed deeply and carefully and prepared the report in a continuous manner. ASA University Bangladesh and BMRC guidelines of ethical consideration were followed in every stages of the study: Inform decision making consent was taken before the face to face interview. We did not apply any force to respondents to participate in this study. The interviews were carried out separately to each respondent. All interviews were conducted as per local language ensuring accuracy and consistency. Questionnaires were frequently checked after completing the interview. The data were noted very carefully and systematically. The privacy of the respondents was strictly maintained. The questionnaires were formed in local, Bengali language to ensure easy access to understand for data collector and respondent. Data backups were maintained strictly and professionally. Interviews were opened to criticism and new ideas. Respondents were not stigmatized & discrimination.

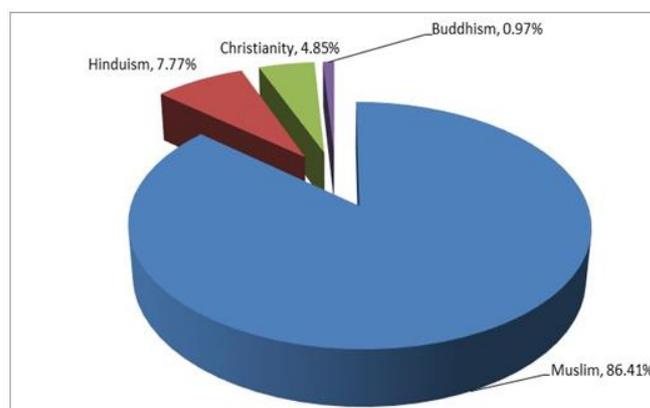
## RESULTS

One Hundred and Three (103) samples size was selected by applying a purposive sampling technique. It was found that, a total 103 respondent's age, 35.92% was between 0-4 years, 21.36% was between 5-8 years, 26.21% was between 9-12 years and 16.51% was between 13-16 years. The maximum, minimum and mean ( $\pm$ SD) age of the respondents was 16 years, 0.5 year and 6.83 ( $\pm$ 4.762) years respectively. Among them 42.72% was boys and 57.28% was girls. Respondent's religious status we found, 86.41% was Muslim, 7.77% was Hinduism, 4.85% was Christianity and 0.97% was Buddhism. Based on educational status of the respondents 6.80% had illiterate, 52.43% had primary level, 29.13% had secondary level, 9.71% higher secondary level and 1.94% had bachelor/post graduate degree label educated. It is declared that, based on main profession of the respondents, 24.27% was house wife, 16.50% was in agriculture, 17.48% was day labor, 21.36% was in business and 20.39% was service holder. Based on monthly family income of the respondents, large ratio (42.72%) of them was within 30001.00 to 60000.00 taka, second large ratio (35.92%) was within 60001.00 to 90000.00 taka, followed by 13.59% was within 30000.00 taka and 7.77% was above 90001.00 taka. The maximum, minimum and mean ( $\pm$ SD) income of the respondents were 110000.00 taka, 18000.00 taka and 58407.77 ( $\pm$ 22276.532) taka. It is found that, 78% of respondents lived in nuclear family, 8.74% of respondents lived in joint family and 5.82% of respondents lived in extended family. According to knowledge on UTI among the respondents 73.79% parents knew about that disease besides 26.21% parents did not know. Maximum duration of suffering

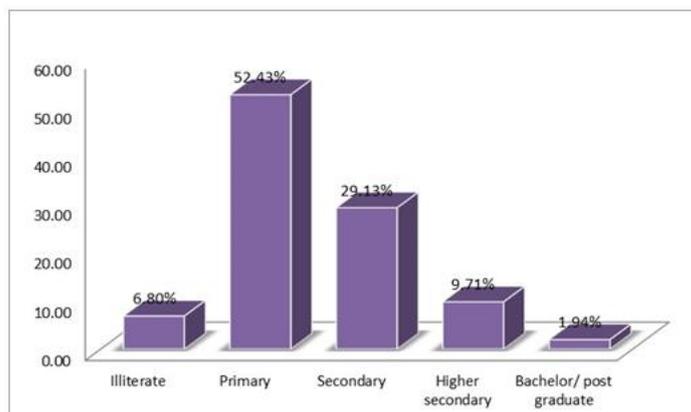
from Urinary Truck Infection (UTI) was 10 days with a mean of 4.3 days and a standard deviation of 2.25 days. It is revealed that, awareness on Urinary Truck Infection (UTI) study population were distributed by 44.66% excellent knowledge, 29.13% good knowledge, 14.56% poor knowledge and 11.65% very poor knowledge. It is revealed that, 96.12% children had experienced on UTI and 3.88% had not ever. It also found that, 13.59% of children suffered in one time, 21.35% of children suffered in two times and 65.06% suffered in several times by UTI in their life span. Among them 32.04% of respondents had other patients in their family. The study population distributed according to their thinking about causes of those disease by 19.42% bacterial related disease, 35.92% water drinking less, 33.01% uncleanness and 11.65% did not know how it acquired to the patients. It is found that, according to condition of toilet safety study population were distributed by 24.27% excellent condition of toilet, 38.83% good condition of toilet, 20.39% poor condition of toilet and 16.51% very poor condition of toilet. It is noticed that, according to sign-syndrome study population were distributed by 74.76% children had Vesico Ureteral Reflex (VUR) besides 25.24 had not, 49.51% children had Prophylactic Antimicrobial Exposure besides 50.49% had not that exposer. It was found that, 100% children had been taken treatment from Dhaka Shishu Hospital during study period. The following figure shows that, study population were satisfied by provided service from Dhaka Shishu Hospital as 43.69% excellent, 36.89% good, 11.65% poor and 7.77% very poor; and behavior of health professional as 40.77% excellent, 41.75% good, 9.71% poor and 7.77% very poor.

**Table-I: Distribution of children according to age. (n=103)**

Age (in years)	N	%
0- 4 years	37	35.92
5-8 years	22	21.36
9-12 years	27	26.21
13-16 years	17	16.51
Total	103	100
Mean ( $\pm$ SD)	6.83 ( $\pm$ 4.762)	



**Fig-I: Distribution of respondents according to religion (n=103)**



**Fig-II: Distribution of respondents according to educational level. (n=103)**

**Table-II: Distribution of respondents according to their family occupation (n=103)**

Occupation	N	%
House wife	25	24.27
Agriculture	17	16.50
Day labor	18	17.48
Business	22	21.36
Service holder	21	20.39

**Table-III: Distribution of respondents according to their family income (n=103)**

Family income (Monthly)	N	%
≤ 30000.00 BDT	14	13.59
30001.00-60000.00 BDT	44	42.72
60001.00-90000.00 BDT	37	35.92
≥ 90001.00 BDT	8	7.77
Total	103	100

**Table-IV: Distribution of respondents by knowledge on Urinary Tract Infection. (n=103)**

Knowledge on Urinary Tract Infection	N	%
Yes	76	73.79
No	27	26.21
Total	103	100

**Table-V: Distribution of respondents by Awareness on Urinary Tract Infection. (n=103)**

Awareness on Urinary Tract Infection	N	%
Excellent	46	44.66
Good	30	29.13
Poor	15	14.56
Very poor	12	11.65
Total	103	100

**Table-VI: Distribution of patients according to thought about causes of UTI. (n=103)**

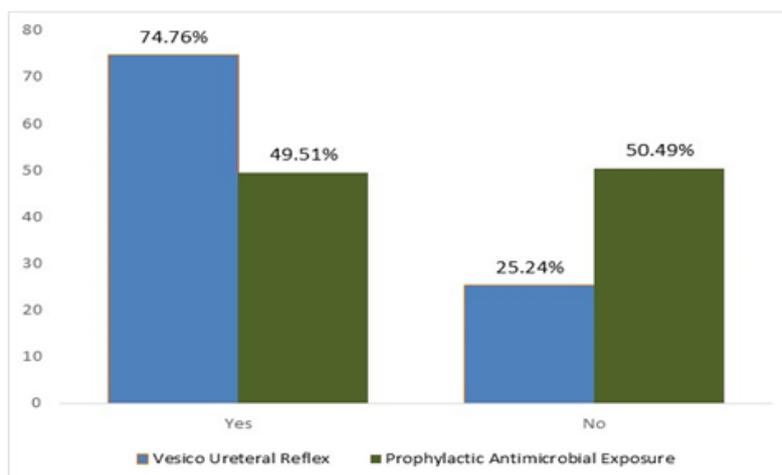
Thought about causes of UTI	N	%
Bacterial related disease	20	19.42
Less drinking of water	37	35.92
Uncleanness	34	33.01
Did not know	12	11.65
Total	103	100

**Table-VII: Distribution of respondents according to condition of toilet safety. (n=103)**

Condition of toilet safety	N	%
Excellent	25	24.27
Good	40	38.83
Poor	21	20.39
Very poor	17	16.51
Total	103	100

**Table-VIII: Distribution of children according to experience on UTI. (n=103)**

Experience on UTI	N	%
Yes	99	96.12
No	4	3.88
Total	103	100

**Fig-III: Distribution of children according to sign-syndrome. (n=103)**

## DISCUSSION

Recurrent urinary tract infections (UTI) are health problems that are frequently encountered by paediatric healthcare providers. Permanent renal cortical scarring may occur in affected children, especially with recurrent UTIs, leading to long-term complications such as hypertension and chronic renal failure<sup>5</sup>. Now a days, the importance of UTI has been increasingly recognized and UTIs are considered as occult cause of febrile illness in young children. It was a descriptive cross-sectional study conducted in Dhaka Shishu Hospital of Bangladesh during the period from May 2018 to August 2018. One Hundred and Three (103) samples size was selected by applying a purposive sampling technique. This study was conducted on recurrent cases only. Large number of patients were found from 0-4 year's age group and it was near about 36%. By age 5, about 8% of girls and 1-2% of boys have had at least one urinary tract infection (UTI)[6]. Urinary tract infections (UTIs) usually occur as a consequence of colonization of the periurethral area by a virulent organism that subsequently gains access to the bladder. During the first few months of life, uncircumcised male infants are at increased risk for UTIs, but thereafter UTIs predominate in females[7]. The fewer number patients were from 13-16 year's age group which was 16.51%. So the study indicates the privileges of recurrent urinary tract infections decreases with the age of children. Based on educational status of the respondents 6.80% had illiterate, 52.43% had primary level, 29.13% had secondary level, 9.71% higher secondary level and 1.94% had bachelor/post graduate degree label educated. It is declared that, based on main profession

of the respondent's family, 24.27% was house wife, 16.50% was in agriculture, 17.48% was day labor, 21.36% was in business and 20.39% was service holder. According to knowledge on UTI among the respondents 73.79% parents knew about that disease besides 26.21% parents did not know. So there is a great scope to work in awareness development in those communities on recurrent urinary tract infection (UTI). It also found that, 13.59% of children suffered in one time, 21.35% of children suffered in two times and 65.06% suffered in several times by UTI in their life span. On the other hand The study population distributed according to their thinking about causes of those disease by 19.42% bacterial related disease, 35.92% water drinking less, 33.01% uncleanness and 11.65% did not know how it acquired to the patients. These data indicates the necessity of increasing awareness about UTIs especially recurrent urinary tract infection in that community. Considering all these, it can be claimed that, in these locality a lot of study and interventions regarding recurrent urinary tract infection (UTI) should be conducted to develop child health.

### Limitations of the study

This study was conducted in selected hospital in tertiary level and thus findings might be specific region which might not represent the whole national situation and might not reflect the status of whole scenario of urinary tract infection.

## CONCLUSION AND RECOMMENDATIONS

There are varies factors in recurrent urinary tract infections in children. This study was conducted in selected hospital in the tertiary level of Bangladesh. Although the knowledge about recurrent urinary tract

infection among the respondents was satisfactory but a big number of parents of the patients were fully unknown about the diseases. So government and other responsible authorities should more focus on recurrent urinary tract infection in children and take more initiatives to arrange more study, seminars as well as awareness campaign on this health problems for better child health.

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