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Original Research

CLINICAL PROFILE OF PAEDIATRIC URINARY TRACT INFECTIONS: A SINGLE CENTRE EXPERIENCE

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Abstract

Background: Urinary tract infection (UTI) is a common bacterial infection in infants and children.The diagnosis of UTI is often missed in infants and young children, as urinary symptoms are minimal and often non-specific. They can be associated with high morbidity and long-term complications like hypertension and renal failure.

Methods: This is an 18-month hospital-based observational research that was carried out at the department of paediatrics at Hi Tech Medical College in Odisha. A total of 1200 urine specimens from paediatricpatients (0–14 years old) suspected of having a UTI were collected (midstream, diaper pad, and catheter aspirated). The identification of bacteria and culture were carried out using accepted microbiological methods. As per the proforma, a thorough clinical examination and detailed history were completed.

Results: The research examined 1200 paediatric UTI cases, with the age range of 0 to 14year having higher distribution cases in males (56.3%) , while 76.5% of the patients were from lower socioeconomic levels. The majority had a fever as the predominant symptom in age group of zero to 2 year, abdominalpain (34.6%) is the predominant symptom in older children.

Keywords: Urinary tractinfection, fever, pain abdomen,Epidemiology, Clinical Presentation

INTRODUCTION

Urinary tract infection (UTI) are one of the commonest cause of febrile illness in pediatric population with a worldwide prevalence of 2–20% [1, 2]. They can be associated with high morbidity and long-term complications such as renal scarring, hypertension, and chronic renal failure [3, 4]. Pediatric UTI cases remain under-diagnosed in many instances due to absence of specific symptoms and signs, especially in infants and young children [5]. It has been estimated that around 50% of UTI in children are missed [2, 6]. Timely diagnosis and targeted treatment decrease the risk of renal scarring and other complications [7, 8].For thispurpose, empirical antibiotic is often prescribed even before the culture results are available.So we proposed to do the present study to estimate the clinical profile of pediatric UTI in a tertiary care teaching hospital.

METHODs

This is a hospital based observational study , conducted in the Department of Paediatrics, Hi Tech Medical College over a period of 18 months. We included a total number of 1200 suspected pediatric UTI cases (age group zero to 14 years) who had visited to the OPD and admitted in pediatric ward.Urine specimens (Midstream clean catch, nappy pad, catheter aspirated) collected from these patients and sent for urine analysis (culture and microscopic examination).To minimize contamination, clean catch midstream method was employed wherever possible. Culture and bacterial identification was done by using standard microbiological guidelines [9]. Children with UTI usually present with non-classical clinical features and these are difficult to diagnose [10].We include cases with abnormal urinalysis with significant pyuria(>5 leukocytes per high power field in a centrifuged sample) , bacteriuria AND Isolation of single species of microorganism in significant number .

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RESULTS

Table 1: Clinical presentation according to age category

symptoms	*<3month(n=305)*		*3 month to 2 year(n=355)*		*3year to 14 year(n=540)*	
	n	*%*	n	%	n	%
fever	277	90.80	209	81.69	123	22.77
vomiting	65	21.31	79	22.25		
Poor feeding	64	20.98	72	20.28		
lethargy	59	19.34	67	18.87		
irritability	49	16.06	57	16.05		
Failure to thrive	29	9.50	38	10.70		
convulsion	20	6.55	22	6.19		
jaundice	11	3.60	13	3.66		
sepsis	9	2.95	10	2.81		
diarrhea			19	7.60		
Pain abdomen					187	34.62
Burning micturition					139	25.74
Frequency/urgency					75	13.88
hematuria					35	6.48
Genital discharge					29	5.37

Fever was the most common symptom in 277(90.8%) of the casesin age group zero to 3 month.Other nonspecific symptoms such as vomiting in 65 (21.31%), poor feeding in 64(20.98%), lethargy in 59 (19.34%), irritability in 49 (16.06%), failure to thrive in 29 (9.5%), convulsion in 20 (6.55%), jaundice in 11 (3.60%), and sepsis in 9 (2.95%) were present in the same age group

In the current study, fever was the most common presenting symptom in children aged three months to two years. It was found in 209 (81.69%) cases, followed by other non-specific symptoms such as vomiting in 79 (22.25%) cases, poor feeding in 72 (20.28%) cases, lethargy in 67 (18.87%) cases, irritability in 57 (16.05%) cases, failure to thrive in 38 (10.70%) cases, diarrhoea in 19 (7.60%) cases, convulsions in 22 (6.19%), jaundice in 13 (3.66%), and sepsis in five (2.81%) cases respectively.

Pain in the abdomen was the most common presenting symptom (34.6%) in the current study, which included cases ranging from 3 to 14 years old. This was followed by other urinary symptoms such as burning micturition in 139 (25.74%) cases, fever in 123 (22.77%) cases, frequency or urgency in 75 (13.88%) cases, haematuria in 35 (6.48%) cases and genital discharge in 29 (5.37%) cases.

According to earlier research, fever, stomach discomfort, vomiting, dysuria, poor feeding, and irritability are often described as signs and symptoms of urinary tract infections (UTIs) [11, 12]. Our results are in agreement with thesestudies. A number of other studies, including those conducted by Winberg J. et al. in 1974 and Ginsburg et al. in 1982, Hoberman et al. in 1993, Shaw KN et al. in 1994, and Naseri M. et al. [13,14,15,16], provide further support for this research.

Table 2: Age distribution of the study population

Age group	**Number**	**Percentage %**
< 3 months	305	25.42
3month-2 years	355	29.58
3-14 years	540	45
Total	1200	100

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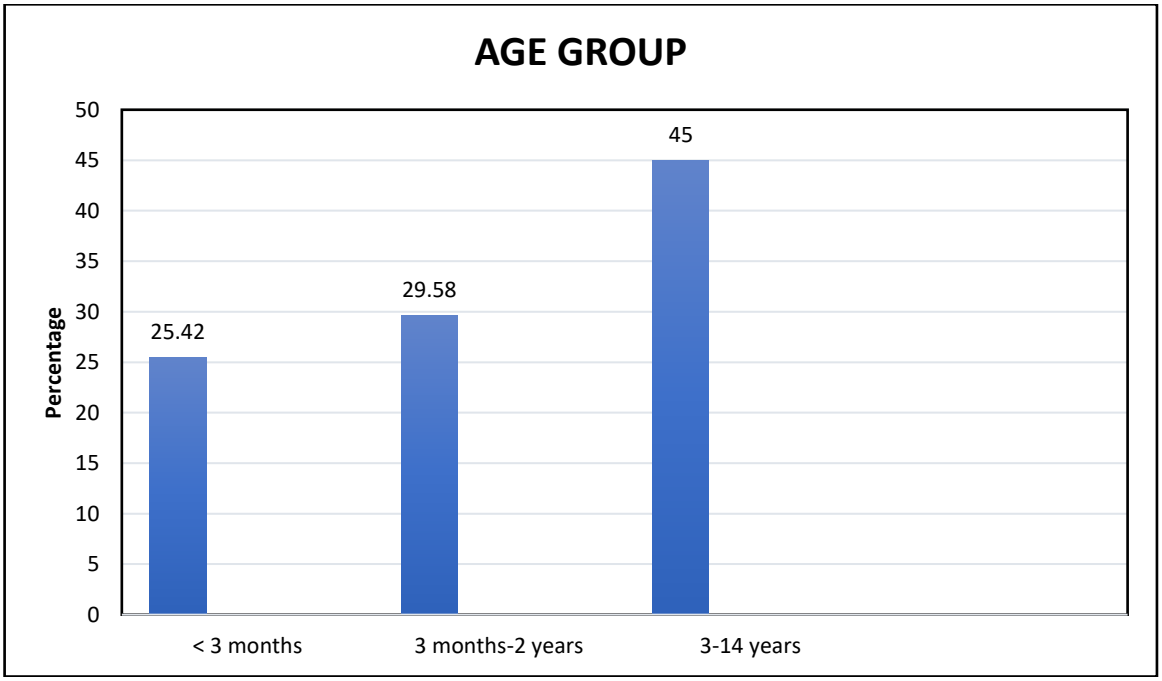

Figure 1: Graphical representation of age distribution of the study population.

The above table presents a breakdown of urinary tract infection (UTI) cases among pediatric patients aged 0 to 14 years. These cases are categorized into three age groups: 0–3-month, 3 months to 2 years, and 3-14 years. With regard to these categories, the age range of 3 to 14 years old has the greatest prevalence of urinary tract infections (UTIs), accounting for forty five percent of the total. The results of this study indicate that children in this age range are more prone to have urinary tract infections (UTIs). This is most likely due to a number of reasons, including greater mobility, hormonal changes that occur throughout puberty, and increased exposure to possible pathogens. On the other hand, the age groups of zero to 3 month and 3 monthsto two years had lower proportions of urinary tract infections (UTIs), accounting for 25.42% and 29.58% of the total, respectively. In spite of the fact that urinary tract infections (UTIs) are less prevalent in younger age groups, it is still important to be vigilant since UTIs in babies and toddlers might indicate underlying urinary system abnormalities and may lead to consequences if they are not treated. The findings, taken as a whole, show the significance of age-specific considerations in the prevention and treatment of urinary tract infections (UTIs), as well as the need of developing individualized therapies that are geared toward various age groups of children.

Table 3: Sex distribution of the study population.

Sex	**Number**	**Percentage %**
Male	750	56.6
Female	450	43.3
Total	1200	100

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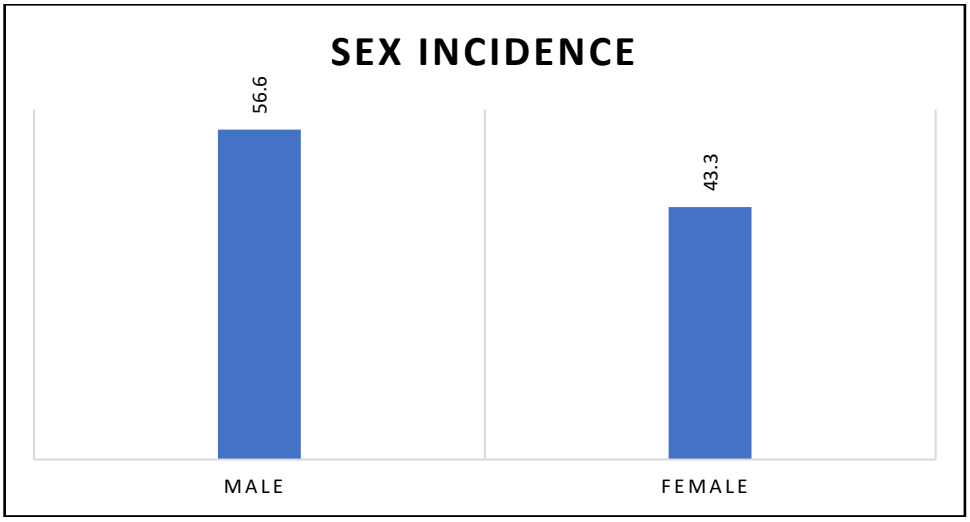

Figure 2: Graphical Representation of Sexdistribution of the study population.

In our study out of 1200 cases, 750 (56.6%) were males and 450(43.3%) were females.A ratio of 1.3 males to 1 female was observed..

Table 4: Incidence of urinary tract infection in urban and rural areas.

Area	Number	Percentage%
Urban	444	30
Rural	756	70
Total	1200	100

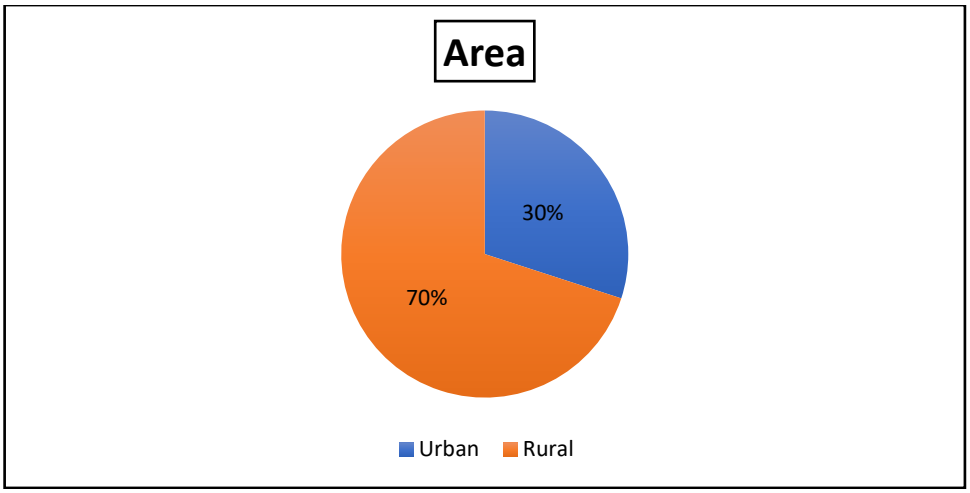

Figure 3: Graphical Representation of distribution urinary tract infection in urban and rural areas

756, or 70 percent, of the youngsters came from rural regions, while 444, or 30 percent, came from urban areas.

Table 5: Distribution of urinary tract infection in different social classes

Social class	**Number**	**Percentage %**
Upper	100	10
Middle	300	23.4
Lower	800	66.6
Total	1200	100

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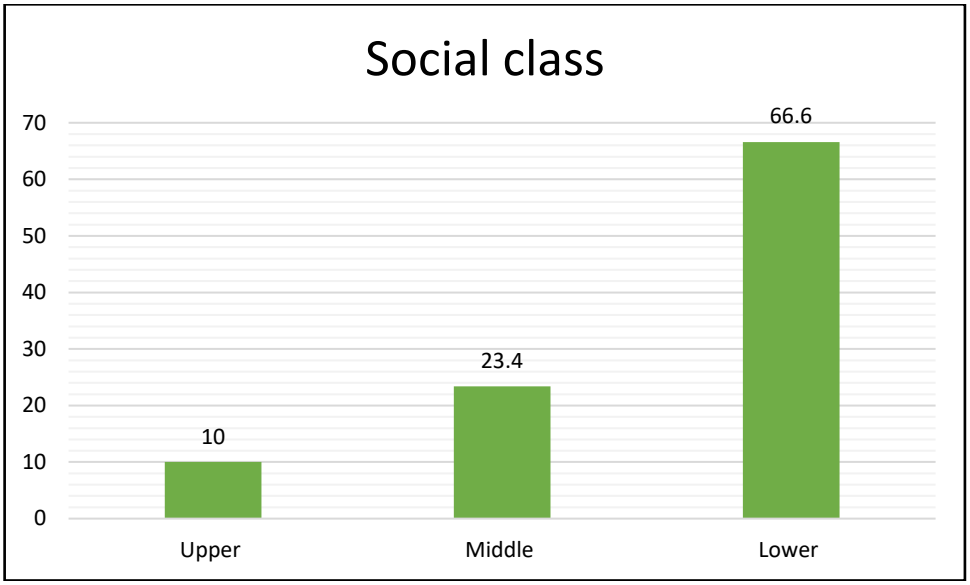

Figure 4: Graphical Representation of distribution of urinary tract infection in different social classes

The majority of the cases were from lower classes, with 66.6% of them being from lower classes and 23.3% being from middle classes.

Table 6: Distribution of urinary tract infection in different nutrition grades.

Nutrition grade	Number	Percentage
Normal	87	10
Grade I malnutrition	312	23.3
Grade II malnutrition	110	16.6
Grade III malnutrition	456	30
Grade IV malnutrition	235	20

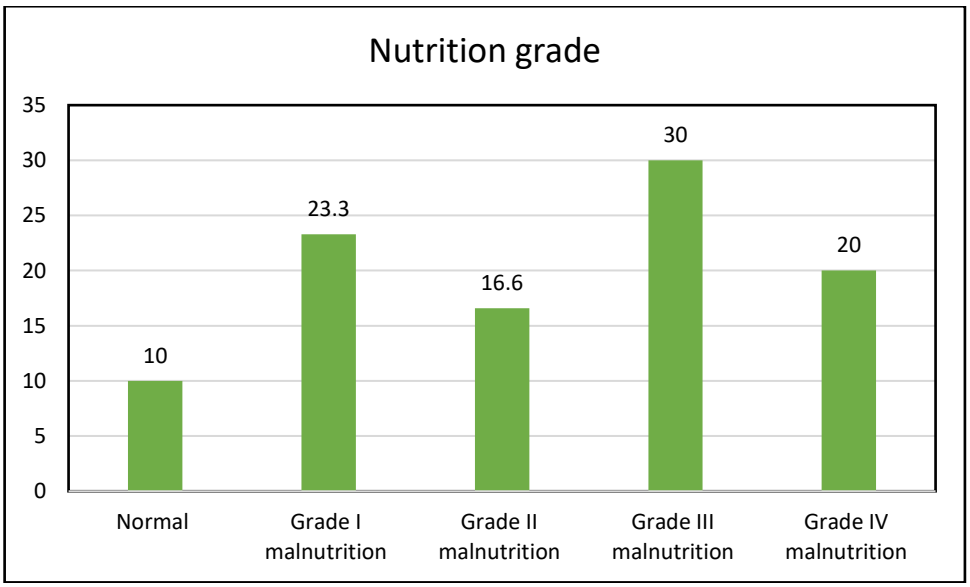

Figure 5: Graphical Representation of distributionof Urinary Tract Infection In Different Nutrition Grades

From normal to Grade IV malnutrition, the table offers insights into the distribution of urinary tract infection (UTI) cases among pediatric patients across various nutrition grades. These grades range

from normal to malnutrition. Among these categories, Grade III malnutrition stands out as having the largest percentage, accounting for thirty percent of the total cases. This research highlights the relevance of nutritional status in the treatment of urinary tract infections (UTIs) in children and adolescents by suggesting that there may be a connection between malnutrition and susceptibility to UTIs. Furthermore, malnutrition of Grade I and Grade II contributes considerably to the total burden of urinary tract infections (UTIs), specifically accounting for 23.3% and 16.6% of cases, respectively. In spite of the fact that children with normal nutrition levels and Grade IV malnutrition had lower percentages of cases of urinary tract infections (UTIs), the inclusion of these children highlights the need of conducting complete assessments and managing UTIs across all nutrition grades. When taken as a whole, the findings highlight the significance of taking into account nutritional status as a factor in urinary tract infections (UTI) susceptibility among pediatric patients. Furthermore, they highlight the need of individualized therapies that address malnutrition as a component of holistic approaches to UTI care.

5. DISCUSSION

Within the scope of this research, the objective was to conduct an exhaustive investigation of the clinical profile of urinary tract infections (UTIs) among pediatric patients ranging in age from 0 to 14 years. Our investigation, which was based on earlier studies conducted by Grag et al. and Shiela Ethraj et al., investigated a total of 1200 cases in order to get an understanding of the distribution of urinary tract infections (UTIs) across different age groups. It is important to note that we found that the age range of 3-14 years accounted for almost half of the cases, with 25.42% of the cases occurring in the 0–3-month group and 29.58% occurring in the 3month -2 years group. This age-wise distribution indicates that older children are more likely to be affected by urinary tract infections (UTIs).

Our research also showed that there is a little gender difference in the distribution of urinary tract infections (UTIs), with males accounting for 56.3% of cases and females accounting for 43.7% of cases. There might be underlying causes that are responsible for this gender distribution, such as anatomical variances or abnormalities in the physiology of the urinary system. Furthermore, socioeconomic characteristics were shown to be key predictors, with a shocking 66.5% of instances of urinary tract infections (UTIs) coming from lower social class backgrounds. Because of this gap, it is clear that environmental and healthcare access variables play a significant role in determining the prevalence of urinary tract infections (UTIs) across various socioeconomic strata.

From a clinical standpoint, our research uncovered important insights into the characteristics that are associated with pediatric urinary tract infections (UTIs). Fever was found to be the most common symptom, affecting 90.8 % of the patients in age group of zero to3 month and 81.6 % in age group of 3 month to 2 years.Pain abdomen was the predominant symptom in age group of 3 to 14 year. These clinical manifestations are quite similar to those that were described in earlier research, and they underscore the need of identifying common signs and symptoms in order to aid a rapid diagnosis and the beginning of therapy.

There was a good number of cases of UTI in age group of zero to 3 month.However, the number of UTI presentations was relatively low in this age range. Considering the possibility of ambiguous clinical presentations and the elevated risk of sequelae, this study highlights the need of maintaining a heightened level of care while detecting urinary tract infections (UTIs) in newborns.

All things considered, the findings of our research provide important insights into the intricate interaction of demographic, clinical, and socioeconomic variables that influence the epidemiology of urinary tract infections (UTIs) in children. We hope that by putting light on these processes, we will be able to develop more focused preventative initiatives and enhance the treatment of urinary tract infections in children.

6. CONCLUSION

Diagnosis of UTI is really challenging due to its vague presenting symptoms, especially in young children. Thus, a high index of suspicion is appropriate when a young child presents with fever or other vague symptoms [17].Fever was the most often noted symptom [18].Theratio of male to females was 1.33 to 1. There was a higher rate of urinary tract infections in provincial regions contrasted with urban regions. The majority of the children came from middle-class families. Malnourished children in grade III had a higher incidence of the condition.

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