

**NEWPORT INTERNATIONAL JOURNAL OF
RESEARCH IN MEDICAL SCIENCES
(NIJRMS)
Volume 3 Issue 2 2023**

**An update on urinary tract infection in Children
less than Five Years**

Emmanuel Ifeanyi Obeagu¹

**¹Department of Medical Laboratory Science, Kampala
International University, Uganda.**

<https://orcid.org/0000-0002-4538-0161>

ABSTRACT

Urinary tract infection is the third most common cause of febrile illness among children. UTI carries a considerable morbidity among this vulnerable age group because of its potential complications (e.g. hypertension and renal failure) Because diagnosis of UTI among the pediatric age group is challenging if solely based on clinical setting, knowledge of the actual prevalence rates of UTI among children is essential for pediatricians to determine the cost benefit effect of requesting investigations for suspected cases. Infants and children with UTI often present with fever with or without urinary symptoms. During assessment of a febrile child, pediatricians should be aware of the prevalence and risk factors for UTI in febrile children that necessitate further investigations. Prevalence of UTI among children is highly variable among different studies and the variability is attributed to multiple factors. This article aims at reviewing the prevalence of UTI in children reported among various literature studies and discussing factors influencing this prevalence.

Keywords: Children, 5 years, UTI, febrile and infection.

INTRODUCTION

Urinary tract infection (UTI) is a significant health Problem that commonly affects children. It is estimated to be the third most common cause of fever in children after gastrointestinal infections and respiratory diseases [1-5]. UTI at this critical and vulnerable age group is associated with considerable morbidity because it can lead to serious complications such as hypertension, renal scarring, and end-stage renal failure Clinically, children with acute pyelonephritis often present with high fever, abdomen-pelvic pain, and urinary symptoms [6-8]. Therefore, further investigations are required: to determine the accurate diagnosis and prognosis [9]. The prevalence of UTI among children is variable in literature, and many predisposing factors are known to increase the risk of this condition among this age group These factors are either intrinsic related to the integrity of the immune system and the urological organs, or extrinsic Predisposing the child to pathogenic organisms. Intrinsic factors include immune deficiency states, immunoglobulin A levels in urine, and blood group antigens types [10]. Extrinsic risk factors include constipation, non-circumcision in boys, obstructive uropathy, and urolithiasis The aim of this article is to review the prevalence of UTI Reported among children in various literature studies and to discuss the factors that influence the prevalence rates among the pediatric age group [11-13].

Obeagu

This is an Open Access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited

Prevalence of Urinary tract infection

Urinary tract infection is the third most common cause of febrile illness among pediatric age group, and it accounts for 0.7% of all outpatients' clinic visits [14]. In Emergency Department, up to 14% of children are admitted due to UTI either due to direct infection or indirectly due to its associated complications [15]. Knowledge of the exact incidence and prevalence of UTI among children is essential for pediatricians because the diagnosis of the diagnosis may be challenging on clinical basis, and the incidence and prevalence will determine the cost benefit effect of investigating the condition. For instance, if UTI was rare, routine diagnostic testing would not be beneficial, whilst if it was common, pediatricians will be justified to use lab and imaging investigations for screening the suspected cases [16]. The prevalence of UTI was, therefore, a subject of interest of many researchers. Partly for the difficulty in clinical diagnosis and partly due to the grave potential complications associated with pyelonephritis such as hypertension and end-stage renal failure [17]. Unfortunately, many limitations existed and still exist in estimation of the exact prevalence of UTI among children. First, the child or infant cannot communicate or identify the symptoms of UTI and therefore doesn't seek medical advice except when fever, significant abdominal pain, or pyuria occur. Second, definite clinical criteria for confirmation or exclusion of UTI are still lacking. Third, most of the literature studies could not differentiate between cystitis and pyelonephritis when exploring the UTI prevalence among children. Thus, the reported prevalence rates are considerably variable, inconsistent, and poorly representative. Overall, the prevalence of UTI among febrile infants and young children is estimated to be approximately 4-7%. [11] However, it varies according to the age, sex, race, nutritional state, the state of circumcision, and the other factors as well mentioned in next sections. The prevalence also seems to be increasing over time.

Factors related to urinary tract infection

Many factors were reported to affect the prevalence of UTI among children. Gender is one of the most common factors affecting the UTI prevalence rates. Females were reported to have a higher prevalence rates of UTI in comparison to men particularly during the first 12 months of life [18]. The prevalence among females during the first year of life was reported to be as high as 13.6% of febrile infants [19]. Later on, the prevalence of UTI among females decreased to become equal or slightly lower than male children [20]. The significant difference encountered among both genders may be attributed to the different anatomical structure of the urethra between males and females. The straight exposed urethra in young female infants is vulnerable to transmitted infection in comparison to the tortuous protected urethra of males. With age progression, other risk factors may play a role in increased prevalence of UTI among males such as the uncircumcision. The circumcision state is the second determining factor for the prevalence of UTI among children. Authors reported a significant difference UTI prevalence between circumcised and uncircumcised males. At the age of 3 months, the prevalence of UTI among uncircumcised boys was reported to be as high as 20.1% of febrile infants, whilst rates as low as 0.3% were reported among circumcised boys at the same age This is specifically important for pediatricians to consider the necessity to catheterize all uncircumcised male infants below the age of 3 months presenting to their offices or hospitals with fever. As regards to the age, the prevalence of UTI was reported to decrease over time with age progression in both males and females [18]. The highest prevalence of UTI occurs during the first month of life with values ranging from 8.6 to 11.6% [21].

CONCLUSION

UTI is a common condition among infants and young Children. The prevalence is variable among different Studies and is affected by multiple factors. Overall, the average prevalence is about 7% among febrile children. Age, sex, race, circumcision state, and nutritional state are the main determinant of UTI among children? UTI is more common among females, uncircumcised males, White American children, infants below the age of 3Months, and infants with severe malnutrition. Other Factors that increase the risk for UTI include urolithiasis, Bladder dysfunction with incomplete emptying, vesico-Ureteric reflux, obstructive uropathy, constipation, and Excessive immunoglobulin a excretion in urine. However, data are lacking about the influence of these Factors on the prevalence of UTI among the pediatric age Group.

REFERENCES

1. Krober MS, Bass JW, Powell JM, Smith FR, Seto DS. Bacterial and viral pathogens causing fever in infants less than 3 months old. *Am J Dis Child.* (1985);**139(9):(889-892)**.
2. Ifediora AC, Obeagu EI, Akahara IC, Eguzouwa UP. Prevalence of urinary tract infection in diabetic patients attending Umuahia health care facilities. *J Bio Innov.* 2016;**5(1):68-82**.
3. Kama SC, Obeagu EI, Alo MN, Ochei KC, Ezugwu UM, Odo M, Ikpeme M, Ukeekwe CO, Amaeze AA. Incidence of Urinary Tract Infection among Diabetic Patients in Abakaliki Metropolis. *Journal of Pharmaceutical Research International.* 2020 Nov 17;**32(28):117-21**.

Obeagu

This is an Open Access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited

4. Obeagu EI, Ofodile AC, Okwuanaso CB. A review of urinary tract infections in pregnant women: Risks factors. *J Pub Health Nutri.* 2023; 6 (1): 137:26-35.
5. Okorie N, Obeagu EI, Odigbo CN, Ibe OE, Usanga VU, Jacob IC, A Obi I. Cytological Evaluation of Urinary Samples among Vesicovaginal Fistula Patients in National Obstetrics Fistula Centre, Southeastern Nigeria. *Asian Journal of Medicine and Health.* 2022 Aug 2; 20(10):136-46.
6. Bachur R, Harper MB. Reliability of the urinalysis for predicting urinary tract infections in young febrile children. *Arch Pediatr Adolesc Med.* 2001;**155(1):(60-65).**
7. Onyenweaku FC, Amah HC, Obeagu EI, Nwandikor UU, Onwuasoanya UF. Prevalence of asymptomatic bacteriuria and its antibiotic susceptibility pattern in pregnant women attending private ante natal clinics in Umuahia Metropolitan. *Int J Curr Res Biol Med.* 2017; 2(2):13-23.
8. Obeagu EI, Okoroiwu II, Ezimah AC. Evaluation of serum erythropoietin levels in chronic kidney disease patients in Federal Medical centre, Umuahia, Nigeria. *Int. J. Curr. Res. Biol. Med.* 2016; 1(4):15-21.
9. Chang SL, Shortliffe LD. Pediatric urinary tract infections. *Pediatr Clin North Am.* 2006;**53(3):379-400.**
10. Bent S, Nallamothu BK, Simel DL, Fihn SD, Saint S. Does this woman have an acute uncomplicated urinary tract infection? *JAMA.* 2002;**287(20):2701-2710**
11. O'Brien K, Stanton N, Edwards A, Hood K, Butler CC. Prevalence of urinary tract infection (UTI) in sequential acutely unwell children presenting in primary care: Exploratory study. *Scand J Prim Health Care.* (2011);**29(1):19-22**
12. Ezimah AC, Obeagu EI, Ahmed H, Ezimah UA, Ezimah CO. The prognostic significance of neutrophil polymorph and band counts in under-five children with sepsis in Umth. *Int J Adv Res Biol Sci.* 2016; 3:68-74.
13. Okwuanaso CB, Enweani-Nwokelo IB, Obeagu EI. Isolation and identification of microorganisms in individuals associated with refuse disposal sites and collection centres in Awka metropolis, Nigeria. *ACADEMIC JOURNAL.*
14. Shaikh N, Morone NE, Bost JE, Farrell MH. Prevalence of urinary tract infection in childhood: a meta-analysis. *Pediatr Infect Dis J.* (2008);**27(4):302- 308**
15. Page AL, de Rekeneire N, Sayadi S. Infections in children admitted with complicated severe acute malnutrition in Niger. *PLoS One.* (2013);**8(7):686 699**
16. Crain EF, Gershel JC. Urinary tract infections in febrile infants younger than 8 weeks of age. *Pediatr.* (1990); **86(3):363-367**
17. Newman TB, Bernzweig JA, Takayama JI, Finch SA, Wasserman RC, Pantell RH. Urine testing and urinary tract infections in febrile infants seen in office settings. *Arch Pediatr Adolesc Med.* (2002);**156(1):44**
18. Shaw KN, Gorelick M, McGowan KL, Yakscoe NM, Schwartz JS. Prevalence of urinary tract infection in febrile young children in the emergency department. *Pediatr.* (1998);**102(2):e16**
19. Zorc JJ, Levine DA, Platt SL. Clinical and demographic factors associated with urinary tract infection in young febrile infants. *Pediatr.*(2005);**116(3):644-6480**
20. Lin DS, Huang SH, Lin CC. Urinary tract infection in febrile infants younger than eight weeks of age. *Pediatr.* (2000);**105(2):E20.**
21. Jakobsson B, Esbjörner E, Hansson S. Minimum incidence and diagnostic rate of first urinary tract infection. *Pediatrics.* (199)9;**104(2): 222-226.**

Emmanuel Ifeanyi Obeagu (2023). An update on urinary tract infection in Children less than Five Years. *NEWPORT INTERNATIONAL JOURNAL OF RESEARCH IN MEDICAL SCIENCES (NIJRMS)* 3(2): 44-46.

Obeagu

This is an Open Access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited