Study on Microbiological Profile and Antibiogram in Cases suspected of Paediatric Urinary Tract Infection

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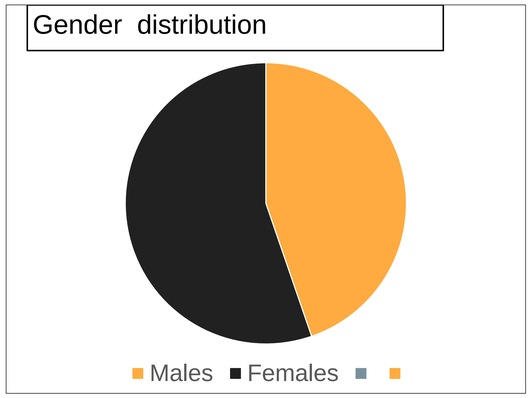
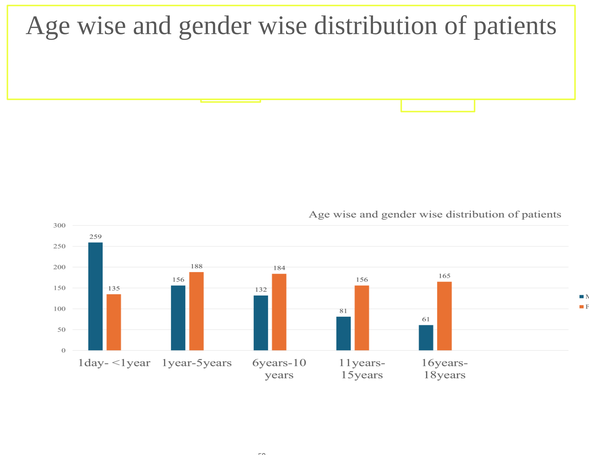
IIntroduction: Urinary tract infection (UTI) is one of the most common bacterial infections in children both in the community and hospital causing significant sources of morbidity in children. UTI is typically caused when bacteria ascend from the urethra into the urinary bladder or to the kidneys. This study aimed to identify the pediatric age group most susceptible to UTI, identify causative microorganisms and the multidrug resistant strains associated.

Material & Methods: A retrospective study was done for a period of one year from July 2024 to June 2025, urine samples were collected from children aged from 1 day to 18 years either admitted or attended outpatient department at a tertiary care hospital. Urine samples were analyzed at the microbiology laboratory. Samples collected were divided into five groups,1day to less than 1 year,1year to 5 years, 6 to 10 years, 11 to 15 years and 16 to 18 years. They were further categorized into males and females. Identification of the bacteria and speciation was done using MALD-TOF (Biomerio,ElToile,France) and antibacterial susceptibility testing was done using Vitex automated system (males and remaining 828 (55.27%) were females. AmBiomerio,ElToile,France)

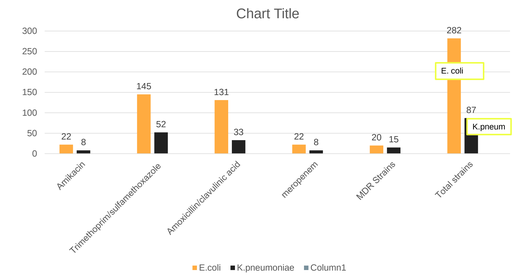
Results: Number of children who attended the hospital during the study period was 1498, out of which 670 (44.72%) were among the boys' maximum number of urine samples collected 259 (38.65%) were from the age group of less than one year of age. Maximum number of samples from the females were collected from the age group of one year to five years 188 (22.70%).No significant growth in 960 samples (64.08%) Most common bacteria isolated was *E.coli* 282(52.41%), of which 260 (92%) strains were susceptible to meropenem and to amikacin and 20 (7.09%) strains were multi drug resistant . Second common isolate was *K.pneumoniae* 87(16.17%), of which 15(17.24%) strains were multi drug resistant.





Sl no	Organism	Number (538)
1	Escherichia coli	282
2	Klebsiella pneumoniae	87
3	Proteus species	18
4	Pseudomonas species	17
5	Enterococcus faecalis	36
6	Coagulase negative Staphylococcus species	18
7	Staphylococcus aureus	5
8	Others(Citrobacter, Acinetobacter, Serratia, enterococcus faecium)	75

Antibiotic resistance pattern of Ecoli and Klebsiella pneumoniae:



Discussion : Our study showed female preponderance was more than male children, study conducted by Ganesh R et al [1], showed the same finding.
Male children of less than 1 year had a greater number of cases than other male groups, study conducted by Kaufman J et al[2] showed similar results.
E.coli was the commonest organism isolated followed by K.pneumoniae, similar findings were also reported by Borola el al [3]
8% of Ecoli was resistant to amikacin and meropenem.7.09% of Ecoli was multidrug resistant strain. 8% of K.pneumoniae was resistant to amikacin and meropenem and 17.24% were MDR strains.Similar study was reported by Duicu C et al[4].

Conclusion :
E. coli and K. pneumoniae were the common bacteria causing UTI having many multidrug resistant strains. This allows them to cause nosocomial outbreaks in hospitals. Therefore, decreasing the pace of the emergence of antimicrobial resistance is essential, through the restricted use of antimicrobials, and the implementation of periodic surveillance of antibiotic stewardship in health care settings.

References:

Ganesh R, Shrestha D, Bhattachan B, Rai G. Epidemiology of urinary tract infection and antimicrobial resistance in a pediatric hospital in Nepal. BMC Infect Dis. (2019) 19:420. doi: 10.1186/s12879-019-3997-0
Kaufman J, Temple-Smith M, Sanci L. Urinary tract infections in children: an overview of diagnosis and management. *BMJ Paediatrics Open*. 2019;3:e000487. https://doi.org/10.1136/bmjpo-2019-000487
Barola S, Grossman OK, Abdelhalim A. Urinary Tract Infections In Children. [Updated 2024 Jan 11]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2025 Jan-. Available from: https://www.ncbi.nlm.nih.gov/books/NBK599548/
Duicu C, Kiss E, Simu I, Aldea C. A rare case of double-system with ectopic ureteral openings into vagina. Front Pediatr. 2018;6(176) doi: 10.3389/fped.2018.00176. [DOI] [PMC free article] [PubMed] [Google Scholar]

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