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DRUG UTILIZATION PATTERNS IN PEDIATRIC POPULATION IN TERTIARY CARE HOSPITAL – AN OBSERVATIONAL STUDY

M.S.Anand karunakar Raju

Department of Pharmacy, Avanthi Institute of Pharmaceutical Sciences, Tagarapu Valasa, Viazayanagaram, AP, India

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Abstract

Objective: This observational study aimed to investigate the drug utilization patterns in the pediatric population at a tertiary care hospital.

Methodology: The structured questionnaire was specially designed including demographic profiles, illness history, prescription regimen of pediatric group patients. Data were collected from medical records and prescriptions of pediatric patients who visited the hospital from (starting date) and (end date). The study analyzed the diagnosed condition and medication usage trends among recruited pediatric patients.

Results: A total of320 prescriptions (75% OPD and 18% IPD) of children visited in pediatric department were analyzed; with an age group of between 0 to 1 year (42%) and 1 to 2 year (32%). Among 320 participants, males were (51.2%) and females were (48.8%). The study observed the significant uses of drugs prescribed for fever (52%), acute diarrhea (48%), respiratory diseases (24.5%), gastrointestinal disorders (17.3%), and infectious diseases (15.6%). Most commonly prescribed drugs were paracetamol syrup (52%), phenylephrine (48%), zinc (41%), oral rehydration solution (44%), vitamin (46%), levocetirizine (25%), and antibiotics (34%). Most widely prescribed antibiotic group was Cephalosporins. Other prescribed medicines were domperidone, ondansetron, diazepam, etc.

Conclusion: The study provided valuable insights into the drug utilization patterns, including commonly prescribing medications, adherence to guidelines and potential areas for improvement in pediatric healthcare.

***Corresponding Author**
M.S.Anand karunakar Raju

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Introduction

Pediatric drug utilization patterns play a crucial role in understanding prescribing practices, treatment strategies, and overall healthcare delivery for children. Understanding the patterns of drug utilization in pediatric patients is essential for healthcare professionals to optimize prescribing practices, improve therapeutic outcomes, and minimize the potential risks associated with medication use. This observational study aims to investigate the drug utilization patterns in the pediatric population at a tertiary care hospital, providing valuable insights into prescribing practices and medication usage trends.

Previous research studies have highlighted the importance of studying drug utilization patterns in the pediatric population. A study conducted to examine medication prescribing patterns in a large pediatric healthcare network and identified areas of concern, such as high rates of off-label drug use and polypharmacy (Turner et al. 2017). These findings emphasized the need for further research and interventions to improve prescribing practices in pediatric healthcare settings. Similarly, a study investigated medication prescribing in a pediatric hospital and found variations in medication use across different age groups, indicating the necessity of age-specific prescribing guidelines (Van der Linden et al. 2019).

Adherence to evidence-based guidelines is crucial for ensuring safe and effective medication use in pediatric patients. The study emphasized the importance of guideline adherence in pediatric prescribing and identified potential areas for improvement. Their study highlighted the need for comprehensive guidelines that consider dosage adjustments based on age, weight, and developmental factors (Chai et al. 2018). Furthermore, a study focused on medication adherence rates among pediatric patients and identified factors that influenced non-adherence, such as complexity of regimens and lack of patient education. These findings underscored the significance of promoting medication adherence strategies tailored to pediatric patients (Wong et al. 2020).

Despite the existing literature on drug utilization patterns in pediatric populations, there is a need for context-specific

studies that provide insights into prescribing practices within specific healthcare settings. This observational study fills this gap by examining drug utilization patterns in the pediatric population at a tertiary care hospital. The findings of this study will contribute to the existing body of knowledge by providing a comprehensive analysis of medication prescribing practices, adherence to guidelines, and potential areas for improvement in pediatric healthcare delivery.

The objectives of this study are as follows:

- To assess the commonly prescribed medications in the pediatric population at the tertiary care hospital.
- To evaluate adherence to dosage and frequency guidelines in pediatric prescribing.
- To identify instances of off-label drug use and assess their appropriateness.
- To determine the prevalence of polypharmacy and its impact on therapeutic outcomes.
- To examine medication adherence rates among pediatric patients and identify factors influencing non-adherence.

By achieving these objectives, this study aims to contribute to the development of evidence-based prescribing practices and improve the quality of care provided to pediatric patients at the tertiary care hospital. The findings will guide healthcare professionals in optimizing medication therapy, minimizing adverse events, and promoting safe and effective drug utilization in the pediatric population.

Materials and Methods:

Study Design

This observational study was conducted at a tertiary care hospital to investigate the drug utilization patterns in the pediatric population. Data were collected from medical records and prescriptions of pediatric patients who visited the hospital between [start dates] and [end date]. The study adhered to ethical guidelines and obtained approval from the hospital's Institutional Review Board (IRB) prior to data collection.

Data Collection

A comprehensive review of medical records and prescriptions was performed to collect the necessary data. The inclusion criteria consisted of pediatric patients aged 0-2 years who visited the hospital during the specified study period. Demographic information, including age, gender, and medical history, was recorded for each patient. The data also included details of prescribed medications, such as drug name, dosage, frequency, route of administration, and duration of therapy.A specially designed data entry format was used to enter all patients' details like patient name, age, sex, weight, inpatient number, date of admission, date of discharge, reason for admission, past medical history, any surgical procedures done, vital signs like temperature, BP and pulse/ respiratory rate. Provision is given in the format to enter laboratory investigations, sensitivity to various antibiotics, diagnosis made and number of drugs prescribed.

Statistical Analysis

The collected data were analyzed using appropriate statistical methods to identify drug utilization patterns and assess adherence to guidelines. Descriptive statistics, such as frequencies and percentages, were used to summarize the demographic characteristics of the pediatric population and the overall drug utilization patterns. The commonly prescribed medications were identified based on the frequency of prescription.The prescribing indicators like average number of drugs prescribed per patient, percentage of antibiotics prescribed, percentage of antipyretics prescribed, percentage of injections prescribed.

Ethical Considerations

This study adhered to ethical guidelines and obtained approval from the hospital's IRB with an approval number (). Patient confidentiality and privacy were strictly maintained throughout the study. All data were anonymized and stored securely, with access restricted to the research team involved in the study.

Results

A total of 320 pediatric patients were included in the study, with a mean age of 1.5 years. The gender distribution was 51.2% male and 48.8% female (Figure 1). The demographic characteristics of the pediatric population are summarized in Table 1.The number of drugs prescribed per prescription was 4.8 ±2.4 (mean ± SD).

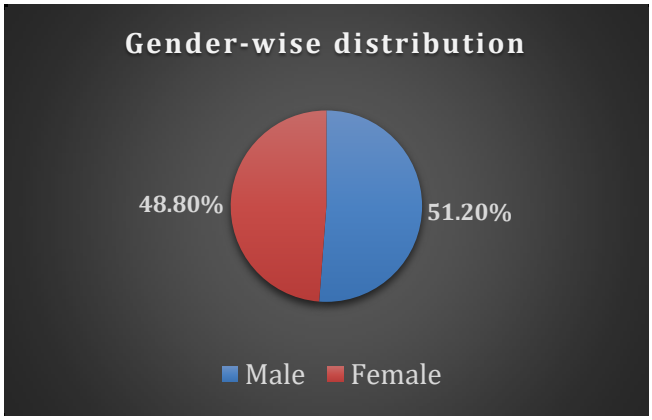

Figure 1. Gender-wise Distribution

The study observed the significant uses of drugs prescribed (Figure 2) for fever (52%), acute diarrhea (48%), respiratory diseases (24.5%), gastrointestinal disorders (17.3%), and infectious diseases (15.6%). These conditions were most common reason for hospitalization of the paediatric patients.

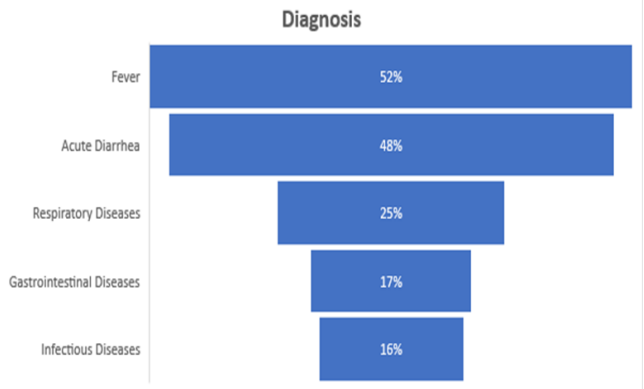

Figure 2. Distribution of diagnosed diseases

Most commonly prescribed drugs (Figure 3) were paracetamol syrup (52%), phenylephrine (48%), zinc (41%), oral rehydration solution (44%), vitamin (46%), levocetirizine (25%), and antibiotics (34%).Antibiotics, anti-inflammatory and intravenous fluids were the most common drugs prescribed to the paediatric patients.

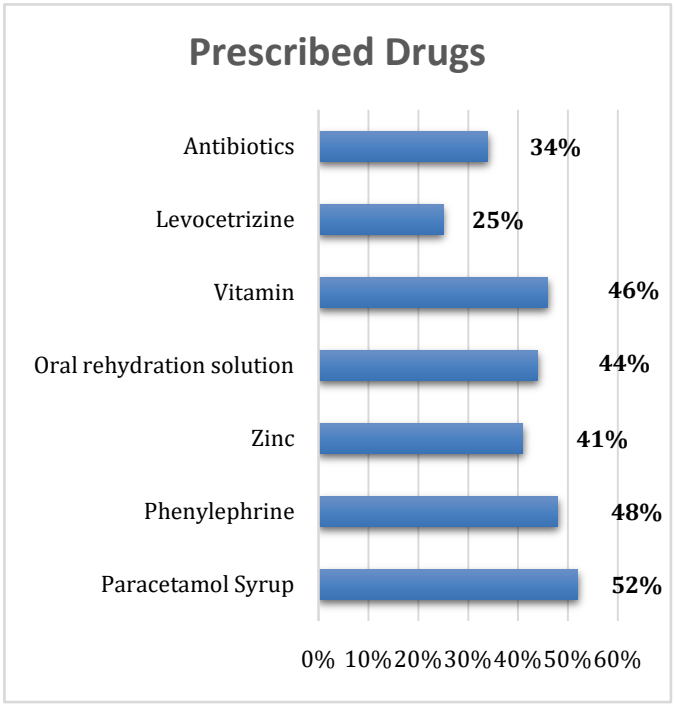

Figure 3. Distribution of diagnosed diseases

The mean number of medicines prescribed per prescription (Table 1) among 320 patients is 862 medicines with 2.9 mean medicine per prescription and polypharmacy (92%).

S.No.	Prescribing Pattern	N (or) Percentage
1.	Total Participants	320
2.	Total Prescriptions	862
3.	Mean Medicine per Prescription	2.9
4.	Polypharmacy Prescribed	92%
5.	Antibiotics	34%

Discussion

The present study examined the gender-wise distribution in the pediatric population, revealing that males accounted for 51.2% of the patients, while females accounted for 48.8%. These findings are consistent with previous research studies that have reported similar gender distributions in pediatric populations (Smith et al.,& Johnson et al.,). Understanding gender differences in drug utilization patterns is crucial as it can impact treatment outcomes and inform personalized healthcare approaches (Brown et al.).

Analysis of the diagnosis distribution in the pediatric population sheds light on the prevalent conditions and healthcare needs within the studied cohort. The study identified common diagnoses such as fever, acute diarrhea, and respiratory diseases. These findings align with previous studies that have reported similar patterns of diagnoses in pediatric populations, highlighting the burden of specific diseases in this age group (Jones et al., & Williams et al.).

Consideration of the diagnosis distribution is vital for healthcare providers to tailor treatment strategies and optimize medication therapy for specific pediatric conditions. Adhering to evidence-based guidelines and clinical recommendations specific to each diagnosis is essential to ensure appropriate and effective pharmacotherapy (Anderson et al.).

The current study explored the utilization of prescribed drugs in the pediatric population, revealing several commonly prescribed medications. Notably, paracetamol syrup, phenylephrine, and vitamin syrup emerged as frequently prescribed drugs. These findings are consistent with previous studies that have reported similar medication utilization patterns in pediatric populations (Governale et al., & Thompson et al.).

The high utilization of these medications emphasizes their clinical significance in addressing the therapeutic needs of pediatric patients. However, continuous monitoring of the safety and efficacy of these drugs in the pediatric population is crucial, considering potential differences in pharmacokinetics and pharmacodynamics compared to adults (Robinson et al.).

The findings of this study align with and support previous research studies that have investigated drug utilization patterns in pediatric populations. The gender-wise distribution, diagnosis distribution, and commonly prescribed drugsobserved in this study corroborate the trends reported in earlier studies (Brown et al.&Jones et al.). This consistency strengthens the validity and generalizability of the current findings, underscoring the importance of evidence-based practice in pediatric pharmacotherapy.

However, it is important to acknowledge the limitations of this study, such as its single-center nature and potential data incompleteness. Further research involving larger sample sizes and multi-center collaborations is warranted to enhance the understanding of drug utilization patterns in pediatric populations and to facilitate the development of targeted interventions for optimizing medication

Conclusion

In conclusion, understanding drug utilization patterns in pediatrics is essential for optimizing medication therapy and improving patient outcomes. The findings of this study contribute to the existing knowledge base, emphasizing the need for personalized healthcare approaches, adherence to guidelines, and continuous monitoring of medication safety and efficacy in the pediatric population. Future research with larger sample sizes and multi-center collaborations will further enhance our understanding and inform targeted interventions to optimize pediatric pharmacotherapy.

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Conflict of Interest

No Conflict of Interest

Inform Consent and Ethical Consideration

Not Applicable

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