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Research article

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### Assessment of the drug utilization evaluation in Pediatric ambulatory care

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#### ABSTRACT

Drug utilization evaluation is very important for antibiotics as they are widely used in hospitals and their inappropriate use in lead resistance. To regulate the rational use of antibiotics and promote the rational use of present prospective cross sectional study, DUE methods are employed. The study was conducted to access drug utilization evaluation in the department of pediatrics in hospitals for a period of three months. Overall 300 patient records were encountered in the study in which Male and Female ratio was (1:5).The prominent range was 0-12 years old and overall prescribed average number of drugs in prescription was 86% the percentage of drug by generic name was (68%), antibiotic prescribed was (78%). The need of the study is to promote rational generic prescribing pattern and use of injection and antibiotics rationally.

#### Objective

The overall aim of the study was to assess the drug prescribing pattern among pediatric population in health care center in Warangal.

#### Methods

This is a prospective cross-sectional study being focused on pediatrics population with a drug utilization evaluation. Using WHO criteria, a prospective study is being carried out to determine the different types of diseases occurred in children and different types of treatments used in ambulatory patients. Data that can be collected that includes demographic details like (age, gender, weight, chief complaints, past medical history, lab parameters, diagnosis of disease).

#### Results

Out of 300 patients records (86.6%) of antibiotic were obtained and analgesic (78.6%) are mostly used and Antitussive (55%) Antihistamine (34.6%), Multivitamin (81%) is more frequently given to age of infants, neonates. Sympathomimetics (16.3%) Antiemetic (12%), H2 Blockers (3%), Proton pump inhibitors (2%) Anticonvulsants (4%) are seldom given to patients in age of children. Antibiotics, Analgesic, Multivitamin are more commonly prescribed to children in prescription.

## Conclusion

In this study antibiotics are mostly prescribed than other drugs and most of the drugs are prescribed in their generic name. After completion of this work we discovered that all of the prescribing drugs were prescribed in rational way and most of the prescriptions are used with proper prescribing pattern. There is no irrational use of drugs.

## INTRODUCTION

Pediatric refers to the branch of medicine that deals with the clinical care of children and adolescents and its main purpose remains to attain a maximum level of potential growth and development of the individuals in the category both physically, mentally and psychologically. The classification of the age group in pediatrics in this study is denoted as Neonates (birth for 1 month), Infant (1 month to 1 year), Children (1-12 years), and Adolescents (12-16 years).

Neonatal death is a global phenomenon that sees a high mortality rate of babies born every year (up to 4 million) not including still born, which accounts for the majority of prenatal death (8 million). Neonatal deaths account for two third of all infant deaths which include Preterm births (29%), severe Infections (29%), Asphyxia (23%) and Malformation (8%).

Drug utilization evaluation is a structured system that is established to regulate and improve the quality of drug use in healthcare, by reducing drug and health related treatment cost, improving quality of medical treatment, evaluating the drug utilization in the outpatient pediatric setting in a healthcare facility, promoting the current standards of optimal therapy and care, prevents medication related problems, evaluating the effectiveness and efficacy of drug therapy. The concept of DUE is classified into the Prospective category (refers to the evaluation of therapy before the medication is given to patient), Concurrent category (refers to the parallel monitoring of therapy while the patient is undergoing treatment) and Retrospective (refers to the evaluation of drug therapy after dispensing has occurred).

The assessment of drug utilization evaluation in pediatric ambulatory care, exists to ascertain drugs used in high risk patients such as (Neonates, infants or children), determine the drugs with high incidence of ADR'S and poor patients outcomes, audit criteria based on recognized standards and clinical guidelines, with reference to data collection, develop and implement interventions related to drug therapy

and clinical practice in pediatric outpatients. Drug quality and patient safety are important factors of pediatric care that are promoted by the benefits of drug utilization evaluation.

## MATERIALS AND METHODS

This prospective cross-sectional study is based on pediatric population with regards to drug utilization evaluation. Using WHO criteria, a prospective study is being carried out to determine the different types of diseases occurred in children and different types of treatments used in ambulatory patients. Data that can be collected includes demographic details like (age, gender, weight, chief complaints, past medical history, lab parameters, diagnosis of disease and treatments).The present study was carried out in Amrutha Children Hospital Warangal, Telangana, India. This study was approved by the Institutional Human Ethics committee (IHEC)/CCPER/2019/007

## RESULTS AND DISCUSSION

The ultimate aim of this study was to make the health care system more rational and cost effective so that it can be beneficial to society. DUE is an expensive, flexible and simple method to assess the utilization pattern of drugs. DUE has defined potential benefits both for patient and clinical practice in carrying out well planned audit of prescribing drug. This study was conducted in order to evaluate and improve the rate of appropriate use of various classes of drugs.

Among all of 300 pediatric outpatients, Male patients (196) patients are occupy more percentage than Female patients (104).In our study the demographic profile showed higher male (61.05%) to female (38.9%) proportion which indicates that males were predominantly common than females for consultation cases, the probable reasons may be the sociological factors in the specified area.

In this study age wise distribution showed that children of 1-6 years (38.6%) are more occupied in total outpatient consultation followed by Infants i.e.

4Weeks-1year (34.6%), Children of 6-12 years (19.6%) and Neonates (7.6%).the common complaints by outpatients in our study was Cough (42.6%) followed by Cold (41.6%), Fever (33%), Bronchitis (20.3%), Vomiting (3%), Loose motions (7.3%), URI (5.3%) and Abdominal Pain (3%).The most common type of drug classes prescribed in this

study are Antibiotics (86%),followed by Multivitamins (81%), Analgesics (78%), Antitussives (55%), Antihistamines (34%), Sympathomymetic (16.3%), Antiemetic (12.6%), Corticosteroids (12%), Anticonvulsants (4%) and H2 Blockers (3%), Protons Pump Inhibitors (2%).

**Table 1: Patient demographics (N=300)**

<b>GENDER</b>	<b>NO OF CASES (%)</b>
Males	196(65%)
Females	104(35%)
<b>AGE</b>	<b>NO OF CASES (%)</b>
Neonates (up to 4 weeks)	23(7.6%)
Infants (4 week-1 year)	102(34%)
Children (1-6 years)	116(38.6%)
Children (6-12 years)	59(19.6%)

In previous study the most commonly prescribed drugs are antibiotic. In our study, Antibiotics were mostly employed and the next group of drugs commonly prescribed in pediatric population include

the Anti-histamines (mainly Syrup-Phenlyepherine) followed by analgesics (especially paracetamol (49.6%) in all pediatric population and Azithromycin (15.6%).

**Table 2: Lab investigations (N=300)**

<b>TEST</b>	<b>NO OF CASES (%)</b>
PH	31(10.3%)
HB	47(15.6%)
RBC	73(24.3%)
WBC	72(24%)

**Table 3: Symptoms in study population (N=300)**

<b>SYMPTOMS</b>	<b>NO OF CASES (%)</b>
FEVER	101(33.6%)
COLD	125(41.6%)
COUGH	128(42.6%)
BRONCHITIS	61(20.3%)
ABDOMINAL PAIN	9(3%)
VOMITTINGS	24(8%)
LOOSE MOTIONS	22(7.3%)
URINARY RESPIRATORY INFECTION	16(5.3%)

**Table 4: Drug classes in study population (N=300)**

<b>CLASS</b>	<b>DRUG</b>	<b>NO OF CASES (%)</b>
ANTIBIOTIC (N=260)	AZITHROMYCIN	47(15.6%)
	AMOXICILLIN	45(15%)
	ROXITHROMYCIN	14(4.6%)
ANALGESIC (N=236)	PARACETAMOL	149(49%)
MULTIVITAMIN (N=243)	BETBANC SYRUP	21(7%)
	ZINCOVIT TABLET	1(0.3%)

ANTITUSSIVE (N=167)	ZINCONIA SYRUP	13(4.3%)
	GAUNIEFENSIN SYRUP	12(4%)
	DEXTROMETHORPHAN SYRUP	129(43%)
ANTIHIISTAMINE (N=104)	DEXTROMETHORPHAN DROPS	26(8.6%)
	PHENYLEPHERINE SYRUP	81(27.3%)
	BUCLIZINE SYRUP	23(7.6%)
SYMPATHOMYMATIC (N=49)	MONTICOFF SYRUP	6(2%)
	NASAL SPRAY DROPS	47(15.6%)
ANTIEMETIC (N=38)	ONDENSETRON SYRUP	23(7.6%)
	DOMEPERIDONE SUSPEN	2(0.6%)

The result is not consistent with previous studies. This could possibly be due to the fact that the previous study calculates the percentage of drug use in each prescription per total study population. In this study 55.3% of population cases contained three or more drugs, which can increase the chances of drug-drug interactions, dispensing errors and adverse drug reaction. The use of antibiotics in this study was found to be frequent (86%). Other studies carried out have reported variable rates of reporting from 39.6% to 82%. In our study, the rate of drug prescribed by generic name was found to be 78.4%. Various other studies reported variable rates from 7.4% to 65%. The style of prescription pattern with generic names reduces medication error and decrease the cost of therapy. Moreover it has been reported that DUE studies of antibiotics in the outpatient environment is not well established as in the patient setting. The usage of antibiotics is higher when compared to other drugs.

## CONCLUSION

Drug utilization evaluation is defined as a detailed authoritative reappraisal of prescribing, dispensing and use of medication. This study concluded that the consultations of male patients are more than female patients. The most common age in our study was 1-6 years and antibiotics are mostly prescribed than other drug classes and most of drugs are prescribed in generic names. Antibiotics are one of the groups of drugs most commonly involved in ADRs and often found to be over used. Inappropriate use of antibiotic leads to increase in antibiotic resistance and may increase the cost of treatment. The present study strongly suggests that is a greater need to create awareness among the public regarding the diseases and life style modification to avoid antibiotic usage.

In our study antibiotics are used in higher proportion by males and also in the present study, administering treatment was rational and good and the following diseases with respiratory infection like Fever, LRTI, URTI, Bronchitis, Loose motions, Anemia, Gastroenteritis and URI were continued with appropriate drugs is considering the risk of antibiotics. Most of drugs are prescribed in generic names and not in brand names, and the complete drugs were used in a rational way. In our study rational drugs are used in proper administration. Consequently, the effect of DUE provides a concise presentation of the misappropriation of relative drug use as well as the intervention employed by clinical practice and the manifestation of pediatric doctrines in a health care setting. Ambulatory care provided to the outpatient in the reviewed case, details the varied principles of drug utilization in relation to the concept of its evaluation. We concluded that patient counseling provides better management to decrease the drug usage and duration of hospitality of infants and children.

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## CONFLICTS OF INTEREST

The Author(S) of this study hereby declares that there exist no conflicts of interest to DIVULGE.

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