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A Prospective Observational Study to Ascertain the Risk Factors towards Drug Therapy Problems in Paediatric Patients

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ABSTRACT:

DTPs are defined as any unfavorable occurrence that a patient experiences that involves or is suspected to involve drug therapy and that actually or potentially impedes a desired patient result, per the Cipolle/Morley/Strand categorization. DTP occurrence may result in treatment failure, and increase the rate of follow-up visits and rehospitalization, as well as significantly increase the need to prescribe additional drugs and the treatment costs. Adverse drug reactions are more common in children than in adults, and children who use medications may experience issues not observed in adults.

The majority of DRPs have to do with prescribing, including drug usage, dosage, and selection . The incidence of DRP can lead to treatment failure raise the frequency of follow-up appointments and readmissions, and dramatically raise the requirement for new medication prescriptions and treatment expenses. The study's findings highlight the role clinical pharmacists can play in encouraging better medication use and making sure pediatric patients receive the right drugs for their conditions while accounting for physiologic factors, polypharmacy, etc., thereby reducing the likelihood of possible drug therapy issues. This study was conducted in tertiary care hospital for a period of 6 months and 150 participants were included .

KEYWORDS *: Drug Therapy Problems, Cipolle/ Morley/Strand Classification,polypharmacy*

Introduction

Drugs are crucial for both disease treatment and health enhancement. DTPs are defined as any unfavorable occurrence that a patient experiences that involves or is suspected to involve drug therapy and that actually or potentially impedes a desired patient result, per the Cipolle/Morley/Strand categorization.[1]By evaluating the suitability of indications, dosage, administration time, and adverse drug reactions with widely accepted guidelines, DTPs can be found.Children are a group that is particularly vulnerable to drug-related issues..[2]

DTP occurrence may result in treatment failure, and increase the rate o followup visits and rehospitalization, as well as significantly increase the need to prescribe additional drugs and the treatment costs [3]. .It is essential to recognize and categorize DTPs in order to offer suitable solutions to reduce them and accomplish desired results at the lowest possible costs. [4] Since the pharmacodynamics and pharmacokinetic behavior of drugs in this population typically differ from that of adults, the pediatric population is at risk of being readily impacted by DRPs. Pediatrics has a distinct set of risks, primarily because of the wide variation in physical and pharmacokinetic parameters, necessitating appropriate medication regimen, administration, and pharmaceutical care, all of which are included in clinical pharmacist intervention.[5]The numerous processes required to calculate, check, prepare, and deliver doses make the process of using medications for children complicated and prone to errors. These elements increase the likelihood of drug-related issues in children.Drug therapy issues lead to an almost twofold increased risk of death and are associated with longer hospital stays and higher financial burden.

The daily use of five or more medications is referred to as polypharmacy. A patient may require additional medication to treat their illness, preventive therapy to lower their risk of developing a new condition, or combination therapy to create an additive impact or synergism for a medical problem physical and pharmacokinetic parameters so it requiresappropriate medication regimen, administration and

Adverse drug reactions are more common in children than in adults, and children who use medications may experience issues not observed in adults. [6].

There are a number of known risk factors for ADRs, many of which are obviously relevant to therapy for children. When the nature of pharmacotherapy for children is taken into consideration, the groups of children most at high risk for ADRs become evident. Both known risk factors

and the nature of pharmacotherapy for children contribute to the fact that children are at a significant risk for ADRs.[7]. Among the possible risk factors include incorrect dosage calculations based on weight and age, pediatric-appropriate dose form-inappropriate items, unlicensed medications, poor communication skills, and a dearth of research data on this population.[8]The majority of DRPs have to do with prescribing, including drug usage, dosage, and selection . The incidence of DRP can lead to treatment failure, raise the frequency of follow-up appointments and readmissions, and dramatically raise the requirement for new medication prescriptions and treatment expenses [9].It is essential to recognize and categorize DRPs in order to offer suitable solutions to reduce them and attain desired results at the best possible costs. [10]

OBJECTIVES:

To ascertain the risk factors towards drug therapy problems in paediatric patients.

MATERIALS AND METHODS :

Study Site: A hospital based observational study was carried out in Srinivas institute of medical science and research centre.

Study Design: A hospital based observational study.

Study Period: The study was conducted for a duration of 6 months.

Study Sample Size: 150 patients

Ethical Clearance: The ethical clearance was obtained from the Institutional Ethics Committee (IEC) of Srinivas Institute of Medical Science and Research Centre (SIMS & RC), Mukka, Mangaluru.

Subjects: The study was conducted among pediatric population between the age group of 1 month – 17 years.

Study Criteria:

a. **Inclusion Criteria**

- Patients of both gender between age group of 1 month-17 years
- Patients with any illness

b. **Exclusion Criteria**

- Patient care taker who are not eager to participate in the study

Source of Data: The data for the study were collected using data collection forms. The data collected included patient's demographic details, personal history, medical and medication history, current diagnosis and drug therapy details, and any problems that were observed by the patient during the course of the treatment.

Materials Used: Data were collected using a structured patient caretaker interview form.

Study Method: Ethical committee approval was obtained before beginning of this study. Patient interview form was designed as per need of the study. Hospital visits were done and data were collected via patient interview and patient interview forms. The data included patient demographic data, personal history, medical and medication history, current diagnosis and drug therapy details and any problems that were observed by the patient during the course of the treatment. The collected data were analysed by the investigators and the risk factors in DTPs were identified. All the data were kept confidential.

Data Analysis: Data collected were analysed using Microsoft Excel

RESULT:

DEMOGRAPHIC DETAILS:

A total of 150 Pediatric patients (aged Between 1 month-17 years old) were enrolled in the study. Patient details along with their medical history was collected from each of them with the help of patient interview form. Out of 150 patients, 88 were male and 62 were female. Among the 150 patients who participated in the study, 142 patients had just one ailment and 16 patients were prescribed with more than 5 drugs. The detailed demographic features of patients participated in this study is given in Table 1.

Table 1: Demographic features and clinical characterization of the patient

VARIABLE	CATEGORY	FREQUENCY N=150	PERCENTAGE (%)
AGE	0-1month	1	0.67
	1month-1 year	14	9.33
	2years-12 years	111	74
	13years-17years	24	16
GENDER	Male Female	88	58.67
		62	41.33
NUMBER OF DRUGS	1-4	134	89.33
PRESCRIBED	≥ 5	16	10.67
NUMBER OF AILMENTS	Single ailment	142	94.67
	Multiple ailment	8	5.33
	Number(n=118)	Percentage (%)	
COMPLICATIONS			
YES	4	3.39	
NO	114	96.61	

Table 2 :Risk factors and prevalence of Drug therapy problems

Variables	**Category**	**Total no. N = 150**	**Patients identified with DTP's (n=118)**	**Prevalence in terms of percentage(%)**
AGE	0-1 month	1	0	0
	1 month – 1 year	14	5	4.24
	2 years-12 years	111	107	90.68
	13 years-17 years	24	6	5.08
GENDER	Male	88	67	56.78
	Female	62	51	43.22
NUMBER OF DRUGS PRESCRIBED	1 -4	134	104	88.14
	≥ 5	16	14	11.86
NUMBER OF DISEASES	Single illness	142	114	96.61
	co-morbidities	8	4	3.39

DISCUSSION:

Issues with drug therapy are growing to be a significant public health concern. Due to a variety of circumstances, including poor prescription and polypharmacy, pediatric patients are more susceptible to DTPs. Therefore, it is vital to identify and prevent DTPs in this group.

There are a number of explanations for the relative ignorance of medication therapy issues in children. Unlike in-patients, out-patients are in charge of obtaining and delivering their own prescription drugs.[1]

The prevalence of DTPs in pediatric patients was shown to have no discernible effect on age group. The age group between two and twelve years old was found to have the highest DTP.According to this study, there was no discernible difference between the prevalence of DTPs and the growing

number of diseases. The majority of participants had DTPs and a single disease diagnosis. According to current research, the study's sample size may be the cause of the aforementioned findings. [4]

According to the current study, there were more male patients than female patients. About 70% of participants were patients under the age of six.[11]to factors like developmental changes, differences in drug metabolism, and varying responses to drugs, pediatric patients between the ages of 2 and 12 are in fact thought to be at high risk for drug therapy issues. Furthermore, research frequently indicates that men may have greater issues with pharmacological therapy than women, however this might change depending on the substance and the disease. These risks can be reduced in this age group and gender by closely monitoring and modifying drug therapy.

Rashed et al. found similar outcomes. The study's findings highlight the role clinical pharmacists can play in encouraging better medication use and making ure pediatric patients receive the right drugs for their conditions while accounting for physiologic factors, polypharmacy, etc., thereby reducing the likelihood of possible drug therapy issues..[6]

Future prospective

Future research should concentrate more on creating and approving risk assessment instruments tailored to children and investigating how technology might enhance pediatric pharmaceutical safety.

For better results and more statistically meaningful data collection, this study can be conducted more successfully in a bigger population. Our results pave the way for further research on the causative relationship between pediatric patients and potential DTPs encountered, with the main objective being to detect, address, and prevent DTPs in order to improve health outcomes for this population

CONCLUSION:

The important risk factors linked to drug-related issues in pediatric patients are highlighted in this study. The results imply that a number of characteristics, including age, gender, and the quantity of medications provided, make juvenile patients more susceptible to drug-related issues. c

The study's findings highlight the role clinical pharmacists can play in encouraging better medication use and making sure pediatric patients receive the right drugs for their conditions while accounting for physiologic factors, polypharmacy, and other factors. This reduces the likelihood of potential drug therapy issues.

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