

Pharmacists clinical intervention on medication error in a Hospital

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Abstract:

Worldwide, medication errors are prevalent and may have severe repercussions such as therapeutic failure, adverse drug reactions, prolonged hospital stays, resource wastage, and even death. This research aims to investigate medication reconciliation errors at a tertiary care teaching hospital in India to find out how often they are, what kind of mistakes are made, and what causes them. The study was carried out in teaching hospital. Pharmacists' clinical intervention was also done in this study. Our study's demographic records revealed that a total of 1,349 patients were examined for medication errors; of them, 26.91 percent were female and 73.1 percent were male. In addition, we found that the 40–60 age bracket had the highest rate of prescription mistakes. This is because a disproportionately large proportion of patients (35.98%) who sought medical attention at the hospital were within the 40-60 age bracket during the research period. Pharmacists recorded 1,742 interventions in total. Medication mistakes totaling 1,349 were prevented from reaching patients. Out of all the treatments, medication mistakes made up 77.44% (1,349 /1,742). The rate of errors per episode was 0.01 in the critical care unit, which was the lowest. On average, there were 0.13 mistakes for every episode of ward care. Healthcare providers should priorities the deployment of chemists to provide discharge education directly to patients, ideally at their bedside. Randomized controlled trials using rigorous clinical & process outcome evaluation should be a standard component of future research.

Key Words: Reconciliation medication errors, demographic study, prescription mistakes.

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Introduction

Worldwide, drug mistakes are prevalent and may have disastrous outcomes, such as ineffective treatment, unwanted side effects, prolonged hospital stays, unnecessary use of resources, and even death. [1] There will be greater demands for medical care due to an ageing population, and the biggest risk to patient safety is pharmaceutical mistakes.[2] It is possible for medication mistakes to occur at any point in the process, from the writing of the

prescription all the way to the patient taking the pill. Prescribers' sloppy handwriting, acronyms, drug delivery and storage systems, nurses' lack of pharmacology knowledge, improper drug distribution, preparation errors, administration mistakes, insufficient education for patients, and patients' ignorance all play a role in medication errors. [3]

This observational research focuses on a tertiary teaching hospital in India,

investigating medical errors and their relationship with medication reconciliation. The study aims to analyze pharmaceutical mistakes reported by hospital pharmacists within the prescription system. It examines the frequency, types, and severity of these errors, along with pharmacists' involvement in detecting and preventing them.

METHODOLOGY

Study site

The research was place at Sharma Hospital. Care, IT, training, and research all meet or exceed expectations, making it one of India's top hospitals. The hospital has the biggest co-located critical care centre in India, with 100 beds, 32 surgical theatres, and 1,213 inpatient beds. The research facility is second to none in India when it comes to renal dialysis and solid organ transplantation, and it also handles cancer patients. [4,5]

Medication Prescribing System

A "patient information communication system" (PICS) is a mechanism that hospitals use to prescribe medicine to patients' homes. Medical professionals, chemists, and informatics specialists worked together to create the system. It is a state-of-the-art prescription system with built-in clinical decision support capabilities. Contraindications (such as drug-disease or allergy warnings), dosage range checks, and medication interaction alerts are all part of these capabilities. Day cares, outpatient clinics, and hospitals all use the same system. All types of pharmaceuticals, including special prescriptions, may be prescribed and administered via this method. Communications, including imaging findings and internal referrals, clinical observations and evaluations, and laboratory requests and outcomes are all run by the system. Every physician on staff uses PICS when writing prescriptions for inpatients. With over 4,000 users, the system handles 99,000 medication

administration events every week in addition to 30,000 new prescriptions. [6,7,8]

Pharmacists' clinical intervention

The term "medication intervention" refers to any action done in response to an incorrect medication order, with the purpose of proposing modifications to the order that may require contacting medical personnel. The interventions were categorised into two groups: interventions related to prescription error(s) and interventions unrelated to prescribing error(s). Pharmacists recommend treatments that pertain to mistakes in the dispensing, administration, or monitoring of drugs or the patient. [9,10]

Prescribing error

The definition employed in the current study was the widely acknowledged definition that states a "clinically meaningful prescribing error" happens when, due to a prescribing decision / prescription ordering process, there is an unintentional and significant (a) decrease in the likelihood of timely and effective treatment or (b) increase in the risk of harm, in comparison to generally accepted medical practices. [11]

Episode of care

The services may be provided by either a single provider or many chosen providers. They can be for a single hospital stay or numerous hospitalizations within a certain time frame. Typically, patients at the research location were relocated from one ward to another at some stage during their hospitalization. Occasionally, it becomes necessary to transfer patients from a regular hospital ward to the intensive care unit due to their serious condition. As a result, the term was modified to include "the services provided by one or more selected providers, or a stay in one or more specific wards, within a designated timeframe. [12,13]

RESULTS AND DISCUSSION

Demographic status of the patients: -

We detected 1349 patients with medication errors and assessed them all; of them, 26.91

percent were female and 73.19% were male, according to our demographic statistics. Table 1: Patient and medication error distribution by gender.

Gender	Number of Patients	% of Patients	Number of Patients with Medication errors	% medication error
Male	111684	75.16	986	73.09
Female	36908	24.84	363	26.91
Total	148592	100	1349	100

We identified 1,349 patients with medication errors and analysed the year-by-year based on our demographic data. A table was prepared to display the findings. Medication mistakes affected the greatest number of patients in 2021.

Table 2: Year wise Gender distribution of the patients and medication errors

Year	Number of Patients with Medication errors			% of Patients with Medication errors
	Male	Female	Total	
2020	155	92	247	18.31
2021	348	101	449	33.28
2022	242	116	358	26.54
2023	241	54	295	21.87
Total	986	363	1349	100

Medication Error Age -Wise Distribution

According to the age distribution shown in tables 3 of our study's demographic reports, 8.45% of patients had been younger than 20 years old, 16.23% were between the ages of 21 and 40, 43.66% were between the ages

of 41 and 60, and 31.66% were older than 61 (table 7.3). In addition, we found that the 40–60 age bracket had the highest rate of prescription mistakes. This is because a disproportionately large proportion of patients (35.98%) who sought medical attention at the hospital during the research period were within the 40-60 age bracket.

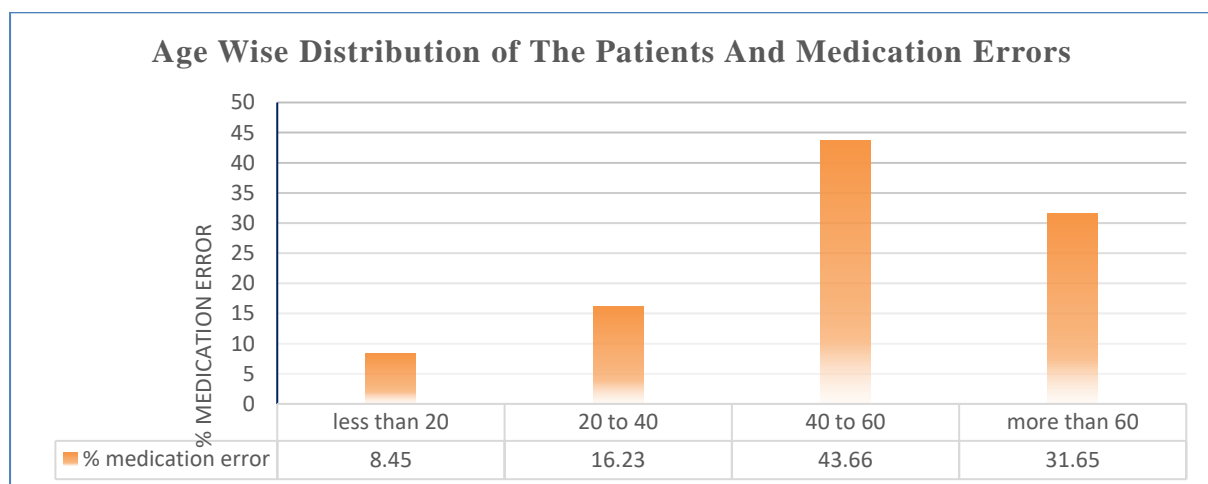


Figure. 1:- Age wise distribution of the patients and medication errors

Table 3: Age wise distribution of the patients with medication errors

Age Group	Number of Patients	% of Patients	Number of Patients with Medication errors	% medication error
less than 20	22355	15.04	114	8.45
20 to 40	30894	20.79	219	16.23
40 to 60	53456	35.98	589	43.66
more than 60	41887	28.19	427	31.65
Total	148592	100	1349	100

Pharmacists’ interventions and medication errors

Pharmacists recorded 1,742 interventions in total. These programmes integrate measures that aren't linked to medication mistakes with those that chemists use to prevent medication errors. Medication mistakes totaling 1,349 were prevented from reaching patients. There were 1,349 medication mistakes out of 1,742 total interventions, or 77.44%. While reviewing

the remaining 393 treatments, the study's investigator decided to omit them. Causes for exclusions included mistakes in monitoring, mistakes in dispensing, or messages sent to prescribers. Table no. 4 shows the correlation between pharmaceutical company involvement and pharmaceutical mistakes. An overall medication mistake rate of 0.91% was determined by finding 1,349 medication errors out of 1,48,592 drug orders.

Table 4: Pharmacists’ interventions and medication errors detail

Year	Medication orders	Interventions	Medication Errors	Total Medication Error Rate
2020	23134	345	247	1.07
2021	37899	537	449	1.18
2022	44534	443	358	0.80
2023	43025	417	295	0.69
Total	1,48,592	1,742	1,349	0.91

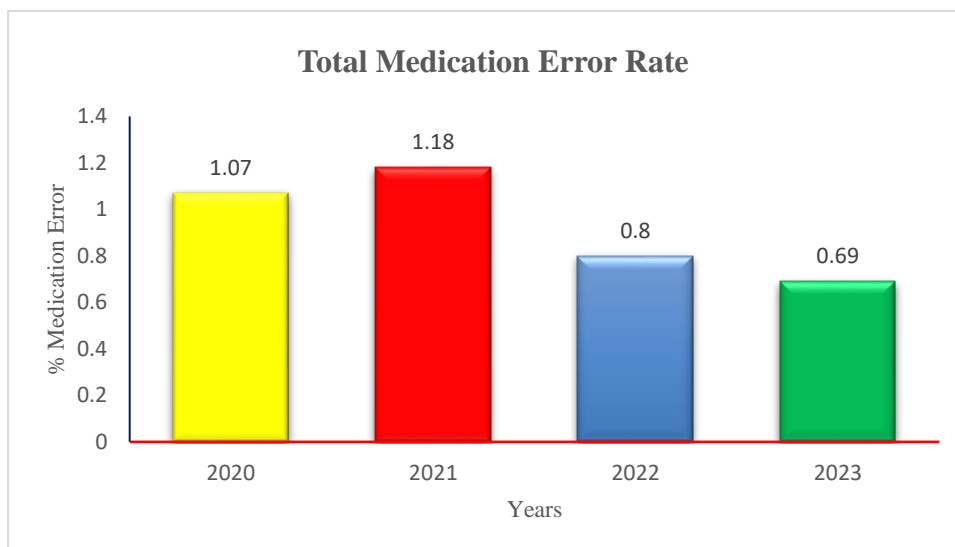


Figure 2:- Total medication errors rate year wise

Medication errors per ward care episode

Errors that were discovered in various ward care events are shown in Table 5. The wards' specialty were associated with a distinct mistake frequency. When looking at the number of care episodes, different wards had different amounts of activity. It is possible that the ward's speciality, caseload, and casemix indirectly impact the

activities that have taken place there, and therefore the medication activities as a whole. Error rates per care episode were greatest on the ENT ward (0.88 per episode), followed by the general medicine ward (0.65 per episode). The rate of errors per episode was 0.01 in the critical care unit, which was the lowest. On average, there were 0.13 mistakes for every episode of ward care.

Table 5: Medication errors distribution per care episode

Ward	Number of errors	Number of care episode	Error per ward care episode
General Medicine	567	876	0.65
Trauma & Orthopaedics	55	1123	0.05
Paediatrics	69	2087	0.03
General Surgery	33	1256	0.03
Cardiothoracic Surgery	9	563	0.02
Maxillofacial Surgery	5	98	0.05
Gastroenterology	245	632	0.39
Critical Care	7	554	0.01
Urology	158	987	0.16
Ear, nose & throat	93	106	0.88
Oncology	23	348	0.07
Cardiology	4	231	0.02
Gynecology	34	765	0.04
Renal	9	324	0.03
Neurosciences	22	441	0.05
Clinical Haematology	16	249	0.06
Total	1349	10640	0.13

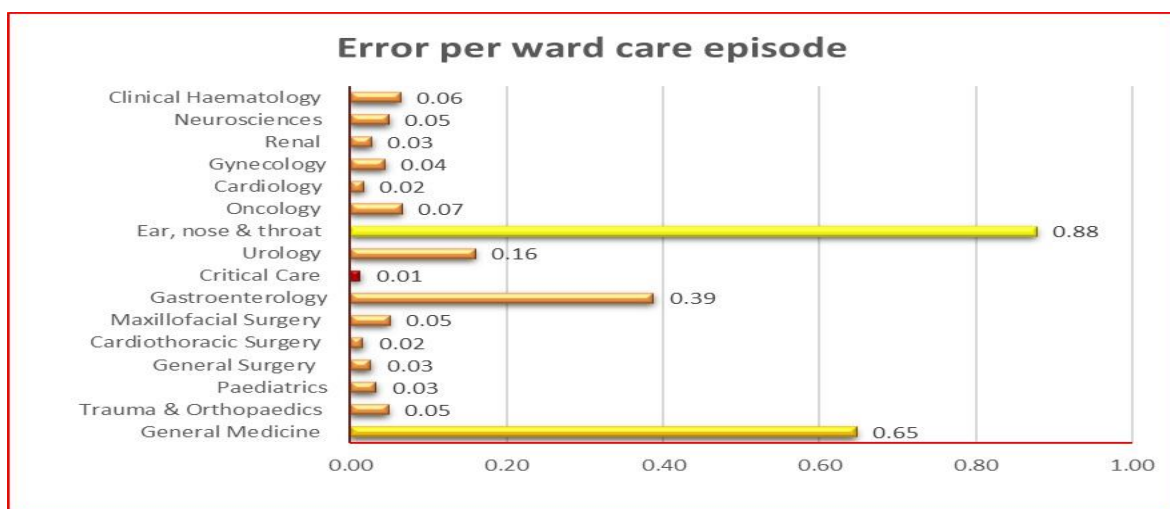


Figure 3 Medication errors distribution per care episode.

SUMMARY AND CONCLUSION

A total of 148592 patients were considered & analyzed in ward Departments During the following study period. The demographic reports of our study showed total 148592 patients were admitted in hospital, out of these 148592 cases 24.84 % were Female & 75.16 % were male cases. The demographic reports of our study showed age wise distribution per year, 247 patients were found in the year 2020 with medication error which was minimum, 449 patients were found between in the year 2021 which is maximum in numbers in data. Our study also showed the higher

incidence of medication errors in 2021. The present study examined the identification of medication errors detected and reported within pharmacists' interventions during daily routine activities validating medication orders in an inpatient English hospital. Medication errors were identified in 0.91% of medication orders and were associated with a wide variety of medication errors types. The highest rates of error per ward care episode were found in Ear, nose & throat 0.88 then general medicine ward 0.65 per care episode. The critical care ward had the lowest rate 0.01 error per episode. The overall errors per ward care episode was 0.13.

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