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PATTERN OF THERAPEUTIC INTERVENTIONS MADE BY CLINICAL PHARMACIST IN A SOUTH INDIAN HOSPITAL

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ABSTRACT

70% of medication errors occurring in the hospitals are preventable. The study was aimed to document, classify and examine interventions and examine reasons as to why pharmacists initiate changes in drug therapy and the outcomes of interventions, also examine the acceptability of interventions to analyze if intervention study can be a reliable learning process and to identify the areas of weakness in case of ineffective interventions. Interventions were broadly classified into Reactive interventions and Passive interventions. The study was conducted for six months. A total of 470 interventions were recorded in this study. Out of these 470 interventions, 104 were reactive interventions and 366 were passive interventions. Out of 92 outcome assessed interventions, the outcomes were beneficial in (91.30%) and had no effect in (8.70%). Active involvement of clinical pharmacists in the wards helps physicians in taking better therapeutic decisions which highlights areas where clinical pharmacists could prove their skill and knowledge to achieve better patient outcomes.

Keywords: Pharmacotherapeutic interventions, Clinical pharmacist, Reactive interventions, Passive interventions.

INTRODUCTION

Healthcare today, is the world's largest industry. This industry, comprising of pharmaceuticals, hospitals, nursing homes, pathological laboratories, day care centers and drug stores, together contributes to the health of nation [1]. Contemporary and future pharmacists must possess specific knowledge, attitudes, skills and behaviors in support of their roles as care-giver, decision-maker, communicator, leader, manager, life-long-learner and teacher. [2] Clinical pharmacy services are an umbrella term used to describe a number of activities undertaken by pharmacist usually in hospitals, which aim to optimize medicines usage. The most widely established of these is the ward pharmacy service, where a pharmacist visit the wards to monitor medication charts, and advise patients, doctor and nursing staff about medicine use [3]. The major categories of intervention evaluation are the recommendation, which based on category of the intervention [4]. "To improve a patient's quality of life, Pharmaceutical care is an accountable provision of drug therapy for the purpose of achieving positive outcomes". Pharmaceutical care delivered by pharmacists seeks to optimize patient outcomes and is a key to the effective, rational and safe use of medicines [5]. Clinical pharmacist activities comprises; medication history interview, medication order review, therapy drug monitoring, adverse drug reaction management, participating in ward rounds, selection of drug therapy, drug therapy monitoring, prevention, assessment clinical review and management of drug interactions, patient medication counseling, provision of drug information, liaison community services [6]. A clinical intervention can also be defined as "an occasion where a clinical pharmacist provides unsolicited advice to a medical officer, if it was through that a change in drug, dose, frequency, route or any other aspect of drug therapy was considered advisable." Interventions were classified into categories within four main groups;

clinical pharmacy, pharmaceutical, therapeutic, cost minimization. classification of reactive interventions are based on errors of dosage, choice of drug, technical deficiencies, duration of treatment, prescribing precautions, adverse effects and interactions and errors in administration. [7, 4]

The present study was aimed to document, classify and examine interventions and examine reasons as to why pharmacists initiate changes in drug therapy and the outcomes of interventions, also examine the acceptability of interventions to analyze if intervention study can be a reliable learning process and to identify the areas of weakness for improvements in case of ineffective interventions.

MATERIALS AND METHODS

The study was conducted in District Hospital, Ooty for a period of six months (July 2010 to December 2010). The study involved collection of data prospectively. Interventions were broadly classified into reactive interventions and passive interventions. The interventions were to be made during the Male Medical Ward (MMW), Female Medical Ward (FMW), Intensive care unit (ICU), Intensive Critical Care Unit (ICCU) and the Pediatric Ward (CHW) along with the attending ward physician.

Once an intervention occurred, the attending clinical pharmacist made a brief note on the intervention form and went to each ward in which the study was carried out and filled in the necessary relevant details and also asks for clarification and details if needed. The outcomes of the interventions were then regularly monitored by the clinical pharmacist. The interventions were then discussed and then classified.

The study protocol was approved by the Institutional Review Board of JSS College of Pharmacy, Ooty, India. The collected interventions were entered into Microsoft Office Excel sheet accordingly. All collected interventions were scrutinized and were classified as reactive interventions and passive interventions. After the intervention patient follow-up has been done to compare the outcome. The scrutinized data were assessed by using Microsoft Excel.

RESULTS

A total of 470 interventions were recorded in this study. Out of these 470 interventions, 104 were reactive interventions and 366 were passive interventions.

Reactive interventions: A total of 104 interventions were made consisted of (55.77%) males and (44.23%) females. The interventions made in major disease conditions were described on Figure 1. Out of which, (22.12%) interventions were made in the Male Medical Ward (MMW), (28.85%) in the Female Medical Ward (FMW), (22.12%) in the Intensive Care Unit (ICU) and Intensive Critical Care Unit (ICCU) and (26.92%) in the Pediatric Ward (CHW).

Intervention made: The interventions in recommending drugs were (27.88%), recommending drugs change were (5.77%), order a lab test were (7.69%), discontinuing drugs were (39.42%), decrease dose were (15.38%) and change in route were (3.85%).

Recommendation based on: The Recommendation based on the patient not responding to therapy were (2.88%), unexpected signs and symptoms occurring were (27.88%), Laboratory findings were (8.65%), Literature cited were (9.62%), Inappropriate/unnecessary drugs or drug regimen were (35.58%) and preventing possible undesirable effects were (15.38%).

Category of recommendation: Interventions related to the drug given with no clinical indications were (14.42%), drug not given when clinically indicated were (9.62%), drug used not the safest or the most efficacious were (16.35%), inappropriate route of drugs were given (3.85%), inappropriate dose were given (3.85%), recommendation made for appropriate drug therapy were (22.12%) and suspected adverse effects were seen (29.81%). The drugs and drug class most frequently involved in the interventions were shown in Figure 2. The intervention were made in enalapril was to recommending the drug in clinical conditions like diabetes mellitus with hypertension and hypertension. The outcomes of the interventions were recorded in (88.46%) interventions and were not recorded in (11.54%) interventions. Out of 92 interventions in which the outcomes were assessed based on the feedback received and the outcomes were beneficial in (91.30%) and had no effect in (8.70%).

Passive interventions: There were 366 passive interventions (drug information queries) recorded. The types of Enquirers were Doctors (21.86%), Nurses (65.57%) and Pharmacists (12.57%). The database references were used in passive interventions are Iowa Drug Information Service (IDIS) (60.66%), IDIS and web (3.83%), IDIS and Medline (0.27%), IDIS, Medline and Web (1.09%), Medline (3.83%), Medline and Web (7.10%), Poisindex (4.10%), Web (18.58%) and others (0.55%).

The book references used in passive interventions were AHFS (30.60%), AHFS and Goodman and Gilman's the pharmacological basis of therapeutics (G&G) (0.27%), AHFS, G&G and Martindale (1.37%), AHFS and Martindale (5.46%), AHFS and other books (0.27%), G&G (3.01%), Harrison's (7.38%), Harrison's and G&G (0.27%), Martindale (37.98%), Merck manuals (5.46%), Merck manuals and G&G (0.27%), Merck manuals and Harrison's (0.27%), Merck manuals and Martindale (0.55%), Merck manuals and other books (0.27%) and other books (6.56%) were mentioned.

The number of drug information queries received per month were July (54.64%), August (14.48%), September (11.01%), October (6.84%) and November (13.03%). Mode of request used for queries were direct access (79.51%), during ward round (19.95%) and telephonic request (0.55%). Time taken to answer queries were immediate (12.84%), same day (21.86%), next day (64.75%) and within a week (0.55%).

The number of queries answered through using the evidence of literatures was (0.27%), through written using tertiary resources were (87.16%) and orally by using secondary resources were (12.57%). The communications used to answer the queries through E-mail were (0.55%), through Phone were (0.27%) and through visit were (99.18).

DISCUSSION

Reactive Interventions: Intervention study is an important integral part of clinical pharmacy activities. Since it provides an opportunity for continuous quality improvement of activities of the clinical pharmacist and in a hospital setting. [8] Clinical pharmacy is practiced only in a handful of institutions in our country and since its practice demands expert guidelines and essential resources, a study of a similar type has not been reported elsewhere. Reactive interventions have worked to the best of their abilities to carry out the present work. [9]

The results were described separately under the broad categories, reactive and passive interventions. Reactive interventions involved direct patient care activities whereas passive interventions are in the form of drug information services that may or may not have involved direct patient care, but certainly influence the physicians' therapeutic decisions. [10] In our study we found that the majority of the interventions were made in clinical conditions like, Ischemic Heart Diseases, Fever, Seizure, Hypertension (HT), Diabetes Mellitus (DM), Chronic Obstructive Pulmonary Disease (COPD), Upper Respiratory Tract Infection, Paralysis, Bronchitis, Acute Gastric Enteritis and Viral Hepatitis.

In the study of Batolar Lakhvinder S. *et al* [7], they have found that, most interventions made on drugs were antibiotics. Our study also found that, most of the interventions were made on antibiotics in a category of discontinuing the drugs. With this study we have found that about one third of interventions were made in child patients. Interventions were made mainly in discontinuing a drug and/or decreasing the dose of drug. We have also found that in child patients, doctors were prescribing the antibiotics in high dose and/or combination of antibiotics.

In the study of Pierrick Bedouch *et al* [11] they found that change in the route of administration improves the patient outcomes. In our study we also found that change in the route of administrations of Paracetamol improves the patient's outcome. Isosorbide producing throbbing headache and furosemide producing weakness were main reason for their interventions.

Passive Interventions: The clinical pharmacists by way of providing drug information to the doctors, nurses, pharmacists, patients and post-graduate students made passive interventions [11]. In the study of Wakasugi Hiroko *et al* [10] they have found that, drug information provided by pharmacists is generally given at the early stages in determination of drug therapy in patients, which was useful for better treatment. In our study, we also found that the drug information queries provided also helped in better patient care.

CONCLUSION

Outcomes of the interventions were beneficial in 91.30 % of the cases where outcomes were recorded. It was observed that, all the beneficial outcomes would have ultimately resulted in the economic benefits to the patients. This shows the significance of the services rendered by the clinical pharmacists at the hospital. Active involvement of clinical pharmacists in the wards helps physicians in taking better therapeutic decisions which highlights areas where clinical pharmacists could prove their skill and knowledge to achieve better patient outcomes.

Also clinical pharmacists could provide valuable information to reduce the complications faced by other health care professionals. In conclusion, it is recommended that the clinical pharmacists in the hospitals all over the country would augment the value of their involvement in better pharmaceutical

care and attempt to extend their services to the patients who approaching the hospital.

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Figure 1: Interventions made in different disease conditions

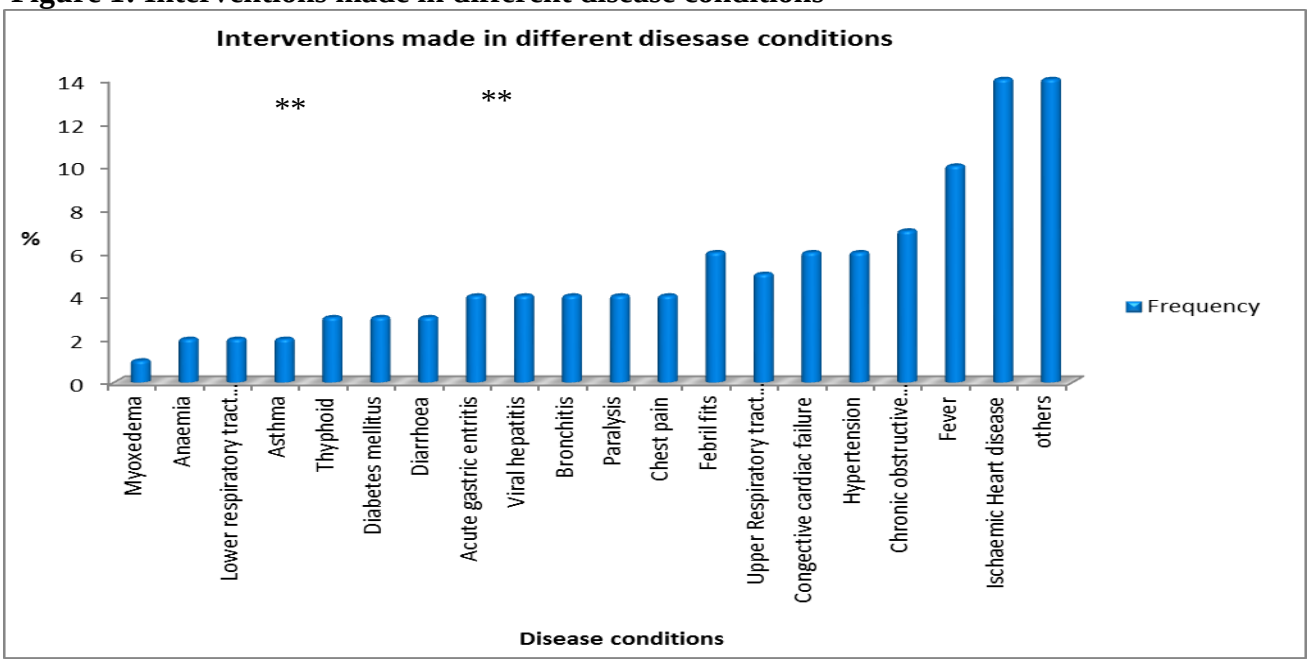
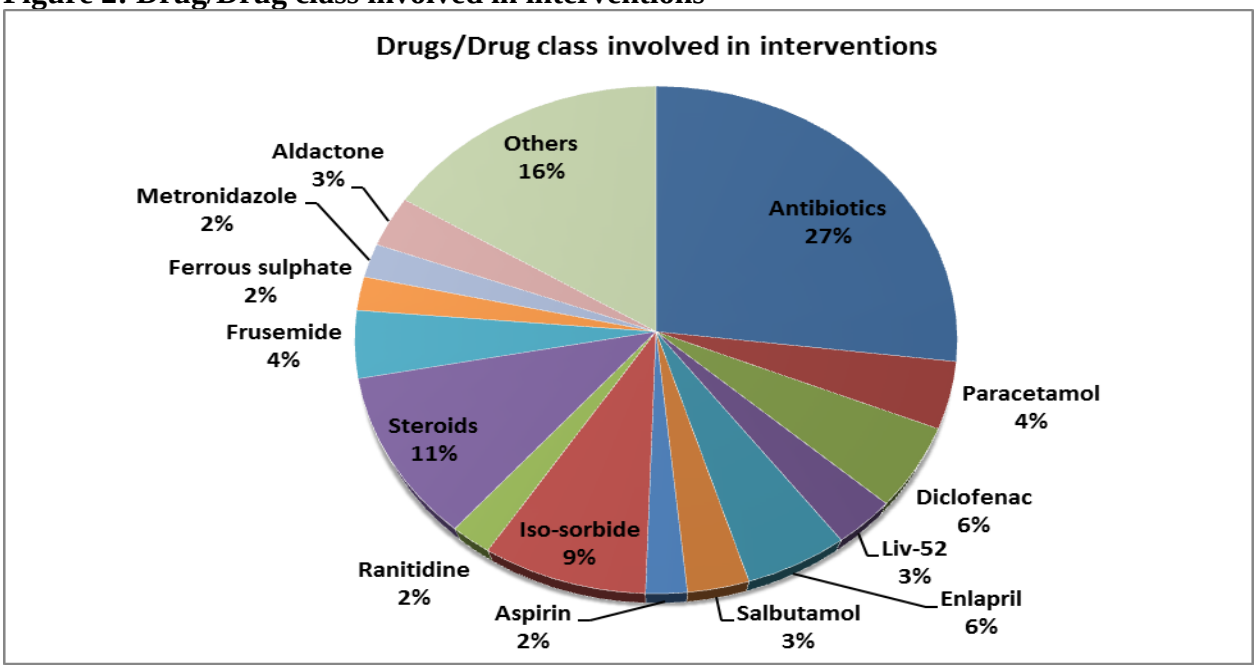


Figure 2: Drug/Drug class involved in interventions



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