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A STUDY ON ASSESSMENT OF DRUG UTILIZATION AND RATIONAL DRUG USE BASED ON WORLD HEALTH ORGANISATION INDICATORS IN HOSPITALIZED PATIENTS OF GENERAL MEDICINE DEPARTMENT OF TERTIARY CARE HOSPITAL

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ABSTRACT

Objective: To identify the drug utilization and rational drug use in hospitalize patients of general medicine department using patients age, sex, drugs encountered and different route of administrations based on WHO core indicators. **Design:** A prospective observational study on drug utilization and rational drug use is carried out using 100 prescriptions of hospitalized patients of general medicine department in tertiary care hospital. **Results:** Out of 100 prescriptions consecutively selected, antibiotics (222, 28.83%) were the most frequently prescribed medicine in which cefoperazone andsulbactum was predominantly prescribed drug. A total of 113 (14.26%) of medicines was prescribed by generic name and 496(64.41%) of drugs was prescribed from WHO essential drug list 2017 which is less compared to WHO standards of 100%. **conclusion:** The drug utilization and rational drug use in hospitalized patients of general medicine department is still sub-optimal. Appropriate interventions are needed by health care providers in tertiary care hospitals.

INTRODUCTION

The study on drug utilization and rational drug use is important tool in the evaluation of standards of health care system and helpful in better pharmacotherapeutics management. Irrational use of drugs leads to antimicrobial resistance, toxicity, adverse effects, increased drug cost, drug utilization studies mainly focus on prescribing dispensing, administering and taking of medications and associated events.[(1)]However to avoid inappropriate use of medication in the health care system, world health organization published a list of essential drugs in 1977 which has been updated every 2 years. [(2)] The rational use of drugs was defined as a Situation where patients receive medications appropriate to their Clinical needs, in both dose and dosage form that meet their own individual requirements for an adequate period of time and the lowest cost to them. Based on a survey WHO more than half of all drugs are either prescribing dispensed (or) sold inappropriately and half of the patients are failed to take them correctly. [(3)]They may be due to lack of information, in adequate training and education of medical graduates, poor communication between health professional and patient, lack of diagnosis of health care system, demand from patients, defective drug supply and ineffective drug regulation and promotional activities of

pharmaceutical industries in primary, secondary and mainly in tertiary care hospital.[4,5]In addition to these some of the general causes like polypharmacy, inappropriate usage of antibiotic by its, over use/misuse/underuse of drugs, failure to prescribe in accordance with clinical guidelines and self-medication or OTC medication promoting irrational use of drugs. [6,7]The impact is widely spread on the consequences of drugs became lethal such as drug dependence due to daily use of painkillers, risk infection mainly in IV administering units, adverse effects due to antibiotic misuse, antibiotic resistance due to wide spread overuse and heavy wastage of resources like vital drugs. [8]Thus the drug utilization studies has become important and WHO recommends a set of drug use indicators (DUI) which are helpful for investigating drug use patterns in health care systems which are also known as WHO core indicators.[9]In most of the hospitals, various difficulties in the developing and maintaining of treatment protocols were encountered. However, attempts to improve the quality of the process of rational prescribing are minimal. Yet, the quality of health care is of vital importance in providing safe patient care and attempts at quality improvement deserve to be explored. So assessment of rational prescribing as per WHO recommendation will result in improvement of rational prescribing.

MATERIALS AND METHODS

A prospective observational,interventional study was carried out in a multi-specialty tertiary care teaching hospital located at Nellore. Ethics committee approval and patients consent were taken before study initiation. The study was carried out for a period of 6 months from May 2018-December 2018 in the departments of general medicine. The prescriptions were collected for a period of six months. Data collection format was designed based on age, sex and number of medicines per prescription, percentage encounter of the drugs as generics, usage of injections and antibiotics percentages, percentage of essential drugs based on WHO 2017 drug list.

Data analysis

All data collected by us were entered and reviewed for precision. The data collected were scrutinized to obtain percentage and mean values. Values obtained were compared with WHO prescribing indicators.

Methods for calculating prescribing indicators

Average number of drugs per prescription was enumerated by dividing the total number of drugs prescribed by the number of prescriptions surveyed. Percentage of drugs prescribed by generic name was obtained by dividing the number of drugs prescribed by generic name by the total number of drugs, which was then multiplied by 100 to obtain percentage. Percentage of antibiotic and injection by the total number of encounters surveyed, was multiplied by 100 to obtain percentage. Percentage of drugs authorized from the WHO essential drug list 2017 was resolved by dividing the number of drugs prescribed from the essential drug list by the total number of drugs prescribed, and then multiplied by 100.

RESULTS

Out of 100 patients the mainly of patients were females (54) followed by males (46) respectively. In this majority of patients were from 26-50 (48) age group followed by above 50 age group (32) and 15-25 (20) age group. The mean age of our study was found to be 43. The demographic details of the patient were shown in Table-1

Prescribing Medicines

The assessment of drugs prescribed according to therapeutic group reveals that out of 770 drugs antibiotics were most predominantly prescribed drugs with 222 (28.82%) with cefoperazone and sulbactum stands highest given antibiotic which is used to treat bacterial infection. Analgesics 174 (22.59%) were the second most frequently prescribed drugs with diclofenac which helps to relieve the pain followed by gastro intestinal drugs 116 (15.06%) are the third most given drug with omeprazole used to minimize acid secretion in our body.The next highest given drugs are anti-emetics

96(12.46%) with the ondansetron used to reduce nausea and vomiting followed by vitamins & minerals 81(10.51%) with the vitB_{12} complex which helps to retain vitamine deficiency followed by antidiabetics 14 (1.81%). It was given in Table 2

WHO Prescribing Indicators:

The average number of medicines per prescription was 7.70; It range is being 1-16 medicines.A total of 113 (14.67%) of the drugs were prescribed in their generic names. Followed by 93% of prescriptions had one or more antibiotics. A total of 222(28.83%) of the antibiotics were prescribed. In our study 97% prescriptions had at least one injection prescribed along with other drugs followed by 71.81% of injections were prescribed.About 496 (64.41%) of drugs were prescribed from the WHO essential drug list 2017. The details were given in Table 3.

DISCUSSION

In general, rational use of medicines helps to improve the standards of health care systems. we have carried out a community based prospective study in a tertiary care hospital at Nellore and 100 patients were participated in the study from inpatient ward of general medicine department.Our study revealed that the average number of drugs per prescription was 7.70 which was higher than WHO standards (1.6 to 1.8). Our study results were comparable to a retrospective observational study conducted in Hyderabad by Mushsina T*et al* among geriatric patients. Which also have reported higher no of drugs per prescription. The study reported that average number of drugs per prescription is 6.07. This can result economical inconvenience to the patients due to higher expenditures for treatment and it may leads to a risk of adverse reactions in some cases.[10] In our study we have observed 64.41% (496) of drugs were prescribed from WHO essential drug list 2017 which was less compared to WHO standards of 100%. Our results were contradictory to the study done by Mende mensa*et al* at public hospitals in Ethiopia which had shown as the percentage of drugs prescribed by generic name and essential drug list was 100% as per WHO standards due to strict hospital formulary guidelines. This shows the importance of hospital to have a separate hospital formulary to improve the prescribing standards as per WHO prescriber indicators.[11] Only 14.26% (113) of medicines were prescribed with generic name in the hospital which may leads to increased cost of treatment. Prescribing the drugs by generic name would be helpful to the patients, as generic drugs when compared to various brands of a particular drug are cheaper in the market which can bring cost effective treatment.currently many hospitals even though less expensive generic medicines are available which are equally effective as that of popular brand still the prescribers are intended to prescribe drugs with the brand name with a high cost. It may be due to the pressure by the representative branded companies (or) by the hospital higher authorities. In our study antibiotics (28.83%) were the most frequently prescribed, with cefperazone and sulbactumwas predominantly given medicine. [12] A similar study was done in Assam by Jubaraj*et al* in Guwahati medical college, revealed that antibiotics are most prescribed drugs where 74.35% of patient received ceftriaxone in injection form which was comparable to our study findings.In our study 22.59% of analgesics was prescribed and diclofenac was most widely used analgesics.A retrospective study was done in Hyderabad revealed that analgesics were the second most predominantly prescribed drugs among geriatric patient with 14.16% of total prescribed drugs [10,13] .This findings were comparable to our study. The third most prescribed therapeutic group was gastrointestinal drugs (15.06%) with omeprazole as most predominantly prescribed drug. Study reported by Feban Abraham *et al*shown that gastro intestinal drugs were most predominantly prescribed with 17.28% among geriatric patients in tertiary care hospital, Karnataka [14] .

TABLE-1: Demographic details of the patients (n=100)

Age groups	Number of patients (n=100)	%
15-25	20	20%
26-50	48	48%
50 above	32	32%
Gender		
males	46	46%
females	54	54%

Table-2: Therapeutic distribution of drugs per prescription

S.NO	Commonly Prescribed drugs	Total number of Drugs (n=770)	% of drugs prescribed
1	Antibiotics	222	28.83
2	Analgesics	174	22.59
3	Gastro intestinal drugs	116	15.06
4	Anti emetics	96	12.46
5	Vitamins/minerals	81	10.51
6	Anti diabetics	14	1.81
7	Others	66	8.57

TABLE-3: Assessment obtained for prescribing indicators versus WHO standards (n=100)

S.NO	Prescribing indicators	Frequency	%
1	Average number of drugs per prescription	7.70	
2	Percentage of drugs prescribed by generic name	113	22.87
3	Percentage of antibiotics prescribed	222	28.83
4	Percentage of injections prescribed	553	71.81
5	Percentage of drugs prescribed from essential drug list 2017	496	64.41

In our study 12.48% of drugs were antiemetics with ondansetron was most widely used among them. Vitamins and minerals (10.51%) are least prescribed medicines .The usage of various drugs in different age groups was assessed antibiotics, analgesics, gastrointestinal drugs was used mostly in adult age group of patients antiemetics and other drugs were used widely in both adults and elderly patients. In the present study 28.83% of antibiotics were prescribed which was slightly greater than the WHO standard range (20-26%). This over prescribing of antibiotics leads to antibiotics resistance which was emerging global problem in health care system. Antibiotic resistance can be managed by following the necessary guidelines and avoiding the over usage of antibiotics.In our study we also found prescribing of injections (78.18%) which are very high when compared to WHO recommended range (13.4-24%). This shows that most of the drugs of the drugs prescribed in the general medicine department of hospitalized patients are in injection forms.[15] In our hospital most of the patients have got admitted in the medicine department due to moderate to severe illness and usage of injection was necessary for the better control and management of disease. However oral drugs should be preferred whenever there is less need for the usage of injections.

CONCLUSION

In our study as we observed, a standard prescribing guidelines of antibiotic usage and WHO recommended guidelines for rational use of drugs need to be followed in hospitals. Awareness should be provided for the practitioners and prescribers regarding rational use of drug that which helps for a better patient care. More studies are required on rational use of drug and drug

utilization such that we can reduce inappropriate use of drugs in health care systems and to reduce risk of adverse drug reaction.

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