ejpmr, 2019,6(11), 270-273

SJIF Impact Factor 6.222

EUROPEAN JOURNAL OF PHARMACEUTICAL AND MEDICAL RESEARCH

www.ejpmr.com

Research Article

ISSN 2394-3211

EJPMR

AN EVALUATION OF PRESCRIBING PATTERN OF DRUGS IN ACUTE CORONARY SYNDROME USING WHO PRESCRIBING INDICATORS

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Article Received on 30/08/2019 **Article Revised on 20/09/2019** **Article Accepted on 10/10/2019**

ABSTRACT

The main objective of drug utilization study is to determine and promote the rational drug use, by evaluating the drug use pattern, using the World Health Organisation (WHO) prescribing indicators. The analysis of prescribing pattern reflects the clinical judgement of the clinicians. A prospective observational study was conducted among 270 in-patients who were diagnosed with Acute Coronary Syndrome (ACS) in a tertiary care hospital for a period of 6 months, to analyze the drug use pattern in accordance with WHO prescribing indicators. The average number of drugs prescribed per encounter was 12.77. Number of drugs prescribed by generic name was only 3.97%. The frequency of the use of injectable preparation was found to be 87.07%. Antibiotic constituted only 18.51% of the total number of encounters .The percentage of drugs prescribed from WHO essential drug list was about 35.62%. The findings of the study reveal that the drug use was not optimal in accordance with the standard values of WHO prescribing pattern. The study suggests the need to increase generic prescribing to reduce the cost of drug as well as to create awareness among the prescribers to prescribe based on essential drug list, to eliminate the unnecessary drugs which may lead to poly pharmacy that may result in other drug related problems.

KEYWORDS: Acute coronary syndrome, WHO prescribing indicators, Poly pharmacy, Rational drug use.

INTRODUCTION

The quality of prescribing drug is a major determinant and plays a crucial role in providing better healthcare. WHO defined that "Rational use of drugs requires that patient receives medications appropriate to their clinical needs, in doses that meet their own individual requirements for an adequate period of time and at the lowest cost of them and their community".

Rational drug prescribing is defined as "the use of the least number of drugs to obtain the best possible effect in the shortest period and at a reasonable cost". Irrational drugs use can leads to reduction in quality of drug therapy, spoilage of resources, raised treatment expenditure, heightened danger of adverse drug reactions and evolution of drug resistance. In developing country like India rational use of medicines is important because of scarcity of financial resources and lesser affordability of the patients. Promoting the rational drug use and increasing the standard of medical treatment, together plays a crucial role in improving therapeutic outcome and quality of life. The present study was aimed on using WHO prescribing indicators to assess drug use pattern in acute coronary syndrome patients who were admitted in the cardiology ward, of a tertiary care hospital, Coimbatore. World Health Organization (WHO) defined rational use of drugs as "patients receive medicines appropriate to their clinical needs, in doses that meet their own individual requirements for an adequate period of time, at the lowest cost to them and their community". Due to the lack of clear, comprehensive, and rational drug policy, the production of pharmaceutical preparations in India is distorted for the most part. A concerted effort is needed to readjust pharmaceutical actions and practices aiming at the rational use of medications.

WHO developed medication use indicators, including prescription indicators with an aim to evaluate the services provided to the population in regards to medications. Prescription Indicators allow the therapeutic actions taken in similar institutions to be ascertained, enabling subsequent comparison of parameters between them, and to evaluate the population's medication needs and determine the most frequently used medications in a given place. In addition,

these indicators enable the investigator to identify the prescription profile and quality of services offered to the population. [1]

The prescription Indicators are as follows:

1. Average number of drugs per medical prescription

This indicator helps in investigating poly-medication, which is a major factor contributing to adverse drug reactions (ADRs) and drug-drug interactions (DDIs). The educational quality informational level of the prescriber may also be observed.

2. Percentage of drugs prescribed by generic name

This indicator enables the investigator to calculate the number of prescriptions in which the drugs are prescribed by the generic name. This helps in controlling drug costs in the health service. It also evaluates the marketing influence on the person prescribing drugs.

3. Percentage of drugs prescribed from essential drug list or formulary

This indicator helps in measuring the degree to which practices conform to the current National Drug Policy (NDP) of October 1998. By following essential drug list, it guarantees the treatment of the principal diseases of the population besides controlling overall cost of medications.

4. Percentage of encounters with an antibiotic prescribed

This indicator evaluates the use of antibiotics in excess which contributes to bacterial dissemination and resistance.

5. Percentage of prescribed injectable drugs

This indicator helps to evaluate the injectable in excess, administration of which may have serious consequences when prescribed or applied wrongly, such as in the event of anaphylactic reactions, adverse reactions, necrosis etc. Even though, this indicator helps in evaluation of attention given to health swiftly, these indicators do not quantify all the important aspects of drug use. [2]

MATERIALS AND METHODS

A prospective observational study was undertaken for six-month period from February 1, 2018 to July31, 2018 in the cardiology and cardiothoracic department of a Tertiary care hospital, Coimbatore Tamil Nadu, India. 270 patients were included in the study in accordance with the inclusion and exclusion criteria.

Inclusion criteria

- All patients of either gender with diagnosis confirmed as Acute coronary syndrome
- Patients with a previous history of ACS

Exclusion criteria

- Pregnant women
- Out patients
- Patients admitted with other heart diseases (Endocarditis, Rheumatic heart disease, Arrhythmias and Cardiac tumours)

Source of data and data collection

The data was collected in a structured proforma from the case file of the patient. The documented data were assessed in accordance with WHO Prescribing Indicators. The sample size was calculated using Rao software, where the confidence interval was 95%, an acceptable margin of error was 5% and the population size was selected as 900 on the basis of ACS patient admissions in the hospital.

Prescribing indicators measurement

a) Average number of drugs per encounter is calculated by, total number of drugs prescribed divided by total number of encounters surveyed
b) Percentage of drugs prescribed by generic name is calculated by, dividing the number of drugs prescribed by generic name by the total number of drugs prescribed, multiplied by 100
c) Percentage of drugs prescribed from essential drugs list or formulary is calculated by, dividing the number of drugs prescribed from the essential drug list, by the total number of drugs prescribed, multiplied by 100
d) Percentage of encounters with an antibiotic prescribed is calculated by, dividing the number of drugs prescribed by antibiotics by the total number of encounters surveyed multiplied by 100
e) Percentage of encounters with an injection prescribed is calculated by, dividing the number of prescription prescribed by injections by the total number of encounters surveyed multiplied by 100

RESULTS AND DISCUSSION

In the study conducted among 270 patients who were diagnosed with ACS, patients in the age group of 60-69 were more prone to the disease, followed by the age group of 50-59, 40-49 years of age (Fig. 1).Among 270 patients male patients dominated than female (Table 1). Mean age of 270 patients was found to be 59.08.

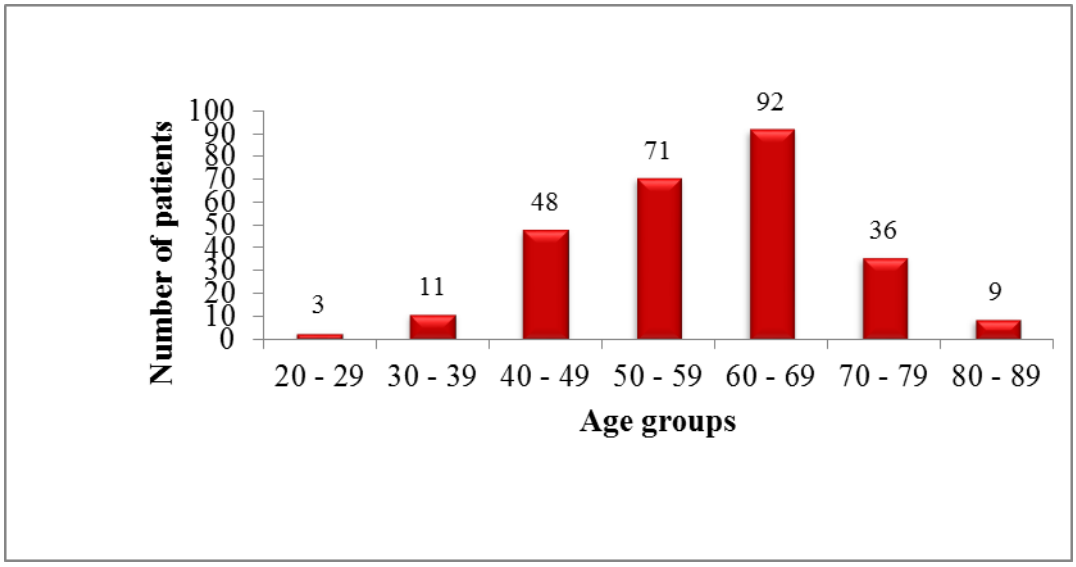

Fig. 1: Age wise distribution of Acute Coronary Syndrome patients.

Table 1: Gender wise distribution of Acute Coronary Syndrome patients.

Sr. No.	Sex	No. of patients (n=270)	Percentage (%)
1.	Male	219	81.12
2.	Female	51	18.89

There was not a single prescription wherein no drug was prescribed. The average number of drugs per encountered was found to be 12.77 in our study which deviated from the standard prescribed, which is similar to the study conducted by Vidhi Thaker *et al.*,.[3] The setting of poly pharmacy was higher in the hospital settings. One possible explanation is that tertiary patients seek expert advice from health care professional for every specific complaints resulting in increasing number of drugs per prescription. According to the WHO standards, every drug must be prescribed with generic name. This is to avoid confusion between doses of drugs with near about similar brand names while dispensing and also to decrease the cost of therapy in our study the brand name dominated by 96.03% which is similar to the study conducted by Narendra P *et al.*,.[4]

Essential drug offers a cost effective solution to many health problems in a developing country. They percentage of drugs from Essential drug list was 35.62%, which was high as compared to that reported by the study conducted by Lalan BK *et al.*, [5] in which only 24.3%. They should be selected with due regards to disease prevalence, be affordable, with assured quality and be available in the appropriate dosage form. The number of encounters with antibiotics was 50. Antibiotic constituted only 18.5% of the number, of encounter which is lower than that of reference value 20.0-26.8.our study is contradictory to the study conducted by Binaya Shreshta and Sanjaya Mani Dixit.[6] Increased use of antibiotic may develop drug resistant bacterial strains and also increases the cost of therapy. We cannot deny the fact that patients are exposed to different antibiotics as the result of self medication and when they require hospitalisation. To promote the rational antimicrobial use, it is essential to intervene the use of antibiotics for a particular indication.

The injection prescribing was higher 84.07% than the WHO standard value, found to be contradictory to the study conducted by Chandana SM *et al.*,[7] in which injection prescribing was lower. The use of injections for treatment may attribute to the development of toxicity from local irritation at the injection site, occurrence of errors are more and difficult to correct. Thus WHO recommended that less than 10% prescriptions should include 1 or more injections.[8] One possible explanation for the increased use of injection is due to the life threatening symptoms of ACS, which requires immediate patient care (Table 2).

Table 2: Result of drug use patterns in ACS with WHO prescribing indicators.

Sr. No.	Prescribing indicators assessed	Standard deviated or ideal	Average/percentage
1.	Average number of drugs per encounter	1.6-1.8	12.77
2.	Percentage of drugs prescribed by generic name	100	3.97%
3.	Essential drug list	100	35.62%
4.	Percentage of encounters with an antibiotic prescribed	20-26.8	18.51%
5.	Percentage of encounters with an injection prescribed	13.4-24.1	84.07%

CONCLUSION

Patient satisfaction can be achieved only if the patient receives rational treatment for the disease. The study revealed that drug utilization pattern was not optimal in accordance with the standards recommended by WHO, evidencing poly pharmacy and suggesting the need to promote prescription based on the National List of Essential Medicine they also emphasizes the need to improvise the consent of generic prescribing to provide a cost effective treatment.

CONFLICT OF INTEREST

None.

ACKNOWLEDGEMENT

We express our heartful of indebtness and owe a deep sense of gratitude to the Institutional guide, Principal and H.O.D for giving their sincere guidance, encouragement and moral support throughout the study. We also express our special thanks of gratitude to our Hospital guide and Project co-guide for their continued support and clinical guidance for the accomplishment of the study. We offer our sincere thanks for the learning opportunities provided by our management.

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