



Research Article

## A Retrospective Observational Study To Determine The Percentage Of Drugs Prescribed By Generic Names In ICU Of A Tertiary Care Hospital In Dakshina Kannada

Viresh K. Chandur<sup>1</sup>, Shreya S.<sup>2\*</sup>, Ashitha Ephrem<sup>2</sup>, Ramakrishna Shabaraya A.<sup>3</sup>

<sup>1</sup>Department of Pharmacy Practice, Srinivas College of Pharmacy, Mangalore, Karnataka, INDIA

<sup>2</sup>Department of Pharmacy Practice, Srinivas College of Pharmacy, Mangalore, Karnataka, INDIA

<sup>3</sup>Department of Pharmacy Practice, Srinivas College of Pharmacy, Mangalore, Karnataka, INDIA

### ARTICLE INFO

Received: 02 Nov 2023

Accepted: 07 Nov 2023

Published: 10 Nov 2023

#### Keywords:

Drug, Prescription pattern, Intensive care unit, Generic drugs, Branded drugs

#### DOI:


10.5281/zenodo.10107374

### ABSTRACT

**Background:** Prescription pattern analysis provides information on current drug use in order to ensure rational drug therapy. WHO developed core drug use indicators which considered as the first line indicator for evaluation of drug use in health care settings. ICUs represents an important platform for conducting prescription pattern studies as patients are seriously ill and are often suffering from chronic critical illness. Multiple medications from a variety of pharmacological classes are prescribed to these patients and this significantly raises their health care costs, and patient's morbidity and mortality. Hence prescribing drugs in generic names in the intensive care unit (ICU) promotes the rational use of drugs and also enhances patient safety. **Methods:** A retrospective study analyzed the prescription pattern of patients admitted to intensive care unit of tertiary care hospital in Dakshina Kannada which was aimed to determine the percentage of drugs prescribed by generic names. The study was carried out for a period of 6 months and the data of 100 patients who met study criteria were extracted from patient's case records in a preformed performa after taking approval from institutional ethics committee and analysed by using Microsoft excel. The parameters assessed were demographic profile of the patients, indication, and utilization of different drugs. **Results:** A total of 100 patients were evaluated consisting 61% of males. Cardiovascular disease was involved in the majority of patients. The average number of drugs per prescription was 11.2 more than WHO recommendation. The average stay of patients in ICU was 3 days. Of drugs prescribed 158 (14%) drugs were prescribed by generic names which includes antibiotics, anticoagulant mannitol and 962(85.89%) by brand names.

\*Corresponding Author: Shreya S.

Address: Department of Pharmacy Practice, Srinivas College of Pharmacy, Mangalore, Karnataka, INDIA

Email : [shreya3280@gmail.com](mailto:shreya3280@gmail.com)

**Relevant conflicts of interest/financial disclosures:** The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.



**Conclusion:** Study concludes that prescription pattern was not optimal in accordance with the standard values of WHO prescribing indicator. The findings underline that there is need to rationalize the drug therapy in terms of increasing prescribing of drugs by generic names instead of brand names.

## INTRODUCTION

Prescription pattern analysis is defined as an insight regarding current drug usage in order to ensure rational drug therapy<sup>1</sup>. Problems linked with drug prescription are quite frequent around the world. Errors in drug prescription are seen as a key threatening factor that affects patient safety across hospital practice<sup>2</sup>. The intensive care unit is a setting where patients who are critically ill are admitted and thus usually receive a large number of drugs of different pharmacological classes due to life threatening illnesses which may be fatal<sup>3</sup>. The pharmacological management of these patients is usually complex and typically involves the administration of several classes of drugs<sup>4</sup>. Prolonged hospital stay, diagnosis during time of admission, and death are associated with increased medication administration. This leads to poly-pharmacy and drug-drug interactions<sup>5</sup>. Clinicians often face challenges in prescribing the right medication and initiating the right therapy, especially when it comes to emergency care department where the chances of irrational prescriptions and errors usually happen. Hence, it would be better to stick on to prescribing drugs by their generic names as it has been emphasized by the WHO in their essential drug list<sup>6</sup>

Prescribing drugs in their generic names in the intensive care unit (ICU) promotes the rational use of drugs for several reasons<sup>7</sup>. It enhances patient safety by reducing medication errors caused by confusion between brand names, as generic names are standardized and less prone to confusion<sup>8</sup>. In the ICU, where medication costs can be substantial, using generic names can contribute to cost savings<sup>9</sup> and enables healthcare providers to choose from a wider range of pharmaceutical

options, often resulting in more affordable treatment choices without compromising quality<sup>10</sup>. Using generic names promotes consistent dosing and administration<sup>11</sup>, facilitating accurate communication among healthcare professionals and supports informed decision-making among healthcare professionals and patients, as they can better understand the active ingredients and potential interactions of the medications being prescribed<sup>12</sup>. WHO developed core and supplementary drug use indicators to assess drug use in healthcare setting. Among which, the core drug use indicators have been considered as the first line indicators validated by WHO for measurement of rationality of drug use<sup>13,14</sup>. This study is conducted to find out extent of drugs prescribed in generic names for patients admitted in Intensive Care Unit and this information will be useful to analyse the rationality of prescriptions using various drug use indicators.

## OBJECTIVES OF THE STUDY

To study prescription pattern of patient admitted to Intensive Care Unit of a tertiary care hospital in Dakshina Kannada

### Specific Objectives:

To determine percentage of drugs prescribed by generic names.

## METHODOLOGY

**STUDY DESIGN:** A Retrospective Observational study was conducted to examine the prescription patterns of patients admitted to intensive care unit of tertiary care hospital in Dakshina Kannada in order to determine the percentage of drugs prescribed in generic name. The study was conducted in Srinivas Institute of Medical Science & Research Centre Mukka, Mangalore between January 2022 to September 2022. The study was limited for a sample of 100 based on the time schedule allotted for the project including other circumstances.

**ETHICAL CLEARANCE:** The study protocol was approved by the Institutional Ethics



Committee (IEC) of Srinivas Institute of Medical Science and Research center (SIMS&RC),Mukka, Mangaluru with Reference number: SIEC/SIMS & RC/2022/10/08

**Inclusion criteria**

- Patients who were admitted in the Intensive Care Unit

**Exclusion criteria**

- Patients who were not admitted in the Intensive Care Unit

**Source of data:** Data collection tool

Data for the study were collected using data collection form from the case files of MRD of Srinivas Hospital Mukka, Mangalore.

**Data(s) collection method:** Data(s) were collected using data collection form from the case files of MRD of Srinivas Hospital Mukka. Data collected include patient name, gender, age, diagnosis, prescription details- names of the drugs (brand and generic names), strength, dosage form, dose, and indication. The collected data were analysed for determining average number of drugs per prescription and percentage of drugs prescribed in generic form. It was assessed using WHO core prescribing indicators. The result obtained were analysed in Microsoft excel and all the data (s) were kept confidential.

**DATA ANALYSIS**

Data analysis involved collecting and scrutinizing every data and were analyzed using Microsoft Excel.

**OPERATION MODALITY**

A retrospective and observational study was conducted for period of 6 months in intensive care unit of tertiary care hospital in Dakshina Kannada with an aim to analyse the prescription pattern of patient admitted to ICU

The study methodology was divided into 3 phases; **Phase 1:**Preparation for the study in which patient’s data collection form were prepared which include the patient’s demographic details, duration of stay in ICU, Diagnosis, Prescription details-

name of drugs(brand and generic names), strength, dose, indication

**Phase 2:** After the ethics approval, in next phase visited Srinivas hospital in Mukka and collected patients case files from MRD based on the inclusion and exclusion criteria and required information was filled in data collection form. Based on the data collected, rationality of prescription is evaluated using WHO core prescribing indicators which includes determining the average number of drugs per prescription,and percentage of drugs prescribed in generic names.

**Phase 3:** The data obtained was analyzed using Microsoft Excel 2021.**Selection of les from MRD**

**RESULTS**

**Demographic characteristics of the study participants**

A retrospective observational study was conducted in intensive care unit in tertiary care hospital over period of six months. A total of 100 participants were included in the study, in which 61%% were males and 39% were female participants, and male to female ratio was 3:2. The most frequent age was 18 – 64 years group (63%, n=63) with males representing 54% (n=34) and females representing 46% (n=29) followed by 65 above years of age (34%) with 25 males and 9 females and only 3% of participants were of 2-11 years of age. The average stay of patients in the medical ICU was 5.5days. The least duration of stay of patient in the medical ICU was 2 days and the maximum duration was 9days. The average number of drugs prescribed per patient was 11.2 which is more than the average number as per norms of WHO.

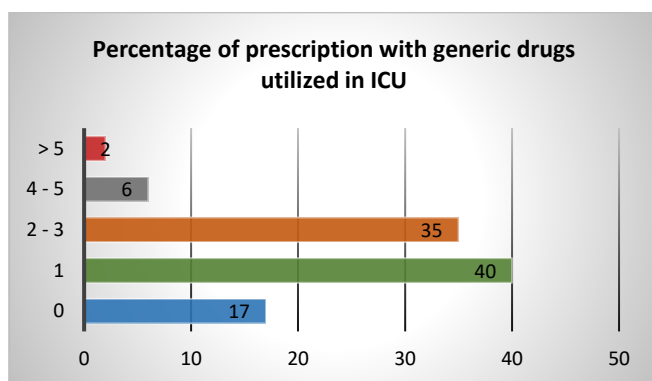
**Table1: Demographic/clinical characteristics of patients during intensive care unit stay**

Clinical characteristics	n
Total number of patients	100
Age groups, years	
<1yr	0
2-11yrs	3
12-17yrs	0
18-64yrs	63

65 and above	34
Sex	
Male	61
Female	39
Number of drugs prescribed/patient	5 to 10
Duration of stay at ICU in days	2 to 9

### Percentage of generic and brand names utilized in ICU

In this study lower proportion of drugs prescribed as generics i.e out of 100 prescriptions, 17% of prescription did not have any drugs prescribed by generic names, 40% of prescription had 1 drug prescribed in generic name, 35% of prescriptions had 2 - 3 drugs prescribed in generic name, and 4% of prescription had 4 - 5 drugs prescribed in generic name. A total of 1120 drugs were identified during the study, 158 (14.1%) were prescribed in generic name and 962 (85.89%) by brand names.



**Fig 1: Percentage of prescription with generic names utilized in ICU**

### DISCUSSION

Intensive Care Unit is a potential area for drug-related problems<sup>15</sup>. The patients who are critically ill and with multiple complications are admitted<sup>16,17</sup>. The pharmacological management of these patients is usually complex and typically involves the administration of several classes of drugs that make them more susceptible to medication error, poor treatment response, adverse drug reactions and also raises the health care costs, patient morbidity and mortality<sup>18,19</sup>. Prescribing drugs in their generic names in the intensive care

unit (ICU) promotes the rational use of drugs, enhances patient safety by reducing medication errors and contribute to cost savings. Hence prescription analysis was conducted in Intensive care unit using WHO core drug use indicators with objective of studying pattern of drug use to determining the percentage of drugs prescribed in generic names. In the intensive care unit (ICU), prescribing drugs by their generic names improves patient safety by lowering medication errors brought on by confusion between brand names, as generic names are less likely to do so<sup>8</sup>. In the ICU, where medicine prices can be high, using generic names can help cut expenses<sup>9</sup> and provide medical personnel access to a wider choice of pharmaceutical options. This frequently results in more affordable treatment options without sacrificing quality<sup>10</sup>. Using generic names helps informed decision-making among healthcare professionals and patients because they can better understand the active ingredients and potential interactions of the pharmaceuticals being prescribed<sup>11</sup>. A retrospective observational study was done in tertiary care hospital for a period of 6months and the prescription data of 100 patients who were admitted in the ICU was collected and analyzed. Prescribing drugs in generic name is important parameter to evaluate the rational use of medicine (RUM). In the present study the percentage of drugs prescribed by generic name was 14%. This findings was lower than the standard derived to serve as ideal(100%)<sup>20,21</sup>and the studies conducted by Rakesh et al(20%)<sup>22</sup> and Shinde RM et al (39%)<sup>23</sup> and Adhikari K et al(45%)<sup>24</sup>. In spite of various benefits like low-cost therapy, better patient compliance and similar therapeutic benefits as that of branded alternative generic prescribing is not common in India. The branded alternative should be opted only if generic drug option is not feasible<sup>25,26,27</sup>. American Academy of family physicians recommends

prescribing drugs in generic forms as strategy to avoid high cost of drug therapy<sup>28</sup>

## CONCLUSION

The present study provides valuable insight about pattern of drugs used in ICU. The study concluded that on evaluation of prescription pattern of ICU patients the percentage of drugs prescribed in generic names deviated from the standard recommended by WHO. So increased prescribing of medications with generic names is required to support rational prescribing in ICU and contribute to cost savings.

## ACKNOWLEDGEMENT

We are thankful to Srinivas Institute of Medical Sciences and Research Centre, Srinivas college of Pharmacy for providing us all the necessary facilities to carry out this research work.

## REFERENCES

1. Kolasani BP, Sasidharan P, Divyashanthi C. M, Rajaseharan A, Jayabal P. Prescribing pattern and who core prescribing indicators in post-operative patients of Gynecology Department of a tertiary care teaching hospital. *International Journal of Basic and Clinical Pharmacology*. 2017;6(1):53-60.
2. Gawali U, Khobragade R. Drug utilization and prescription pattern study in medicine intensive care unit at tertiary care teaching hospital. *National Journal of Physiology, Pharmacy and Pharmacology*. 2019;9(7):674-7.
3. Shinde RM, Kale A, Chube S, Sawant M. Drug utilization study in medical intensive care unit in a rural tertiary care teaching hospital in Maharashtra. *International Journal of Medical Science and Public Health*. 2017;6(4):733-7.
4. Smythe MA, Melendy S, Jahns B, Dmuchowski C. An exploratory analysis of medication utilization in a medical intensive care unit. *Critical Care Medicine*. 1993;21(9):1319-23
5. Sharma N, Parakh R, Sharma D, Sharma P, Sharma PNS. A Drug utilization study in Critically Ill Patients in a Tertiary care Teaching Hospital in North India. *American Journal of PharmTech Research*. 2014;4(1):780-9
6. Kacha HV, Mundhava SG, Kubavat AR. Assessment of drug use pattern, their cost and safety in emergency department at a tertiary care teaching hospital, Rajkot. *International Journal of Pharmaceutical Sciences and Research*. 2018;9(4):1638-43.
7. Irajpour A, Farzi S, Saghaei M, Ravaghi H. Causes of medication errors in intensive care units from the perspective of healthcare professionals. *Journal of Research in Pharmacy Practice*. 2017;6(3):158-165
8. Hoffman JM, Proulx SM. Medication errors caused by confusion of drug names. *Drug Safety*. 2003;26(7):445-52.
9. Flannery AH, Pandya K, Laine ME, Almeter PJ, Flynn JD. Managing the rising costs and high drug expenditures in Critical Care Pharmacy Practice. *Pharmacotherapy: The Journal of Human Pharmacology and Drug Therapy*. 2016;37(1):54-64.
10. Dalton K, Byrne S. Role of the pharmacist in reducing healthcare costs: Current insights. *Integrated Pharmacy Research and Practice*. 2017;6:37-46.
11. Benjamin DM. Reducing medication errors and increasing patient safety: Case studies in clinical pharmacology. *The Journal of Clinical Pharmacology*. 2003;43(7):768-83.
12. Horsky J, Schiff GD, Johnston D, Mercincavage L, Bell D, Middleton B. Interface design principles for usable decision support: A targeted review of best practices for clinical prescribing interventions. *Journal of Biomedical Informatics*. 2012;45(6):1202-16.
13. Sisay M, Mengistu G, Molla B, Amare F, Gabriel T. Evaluation of rational drug use



- based on World Health Organization core drug use indicators in selected public hospitals of eastern Ethiopia: a cross sectional study. *BMC Health Services Research*. 2017;17(1):161
14. Ofori-Asenso R, Brhlikova P, Pollock AM. Prescribing indicators at primary health care centers within the WHO African region: A systematic analysis . *BMC Public Health*. 2016;16(1):1-14.
  15. Pichala PT, Kumar BM, Zachariah S, Thomas D, Saunchez L, Gerardo AU. An interventional study on intensive care unit drug therapy assessment in a rural district hospital in India. *Journal of Basic and Clinical Pharmacy*. 2013;4(3):64-7.
  16. Sharma P, Kapoor B. Study of prescribing pattern for rational drug therapy. *JK science*.2003;5(3):107-9.
  17. Kaur S, Rajagopalan S, Kaur N, Shafiq N, Bhalla A, Pandhi P et al. Drug Utilization Study in Medical Emergency Unit of a Tertiary Care Hospital in North India. *Emergency Medicine International*. 2014; 2014:1-5.
  18. Patel MK, Barvaliya MJ, Patel TK, Tripathi C. Drug utilization pattern in critical care unit in a tertiary care teaching hospital in India. *International Journal of Critical Illness and Injury Science*. 2013;3(4):250-5.
  19. Shankar PR, Partha P, Dubey AK, Mishra P, Deshpande VY. Intensive care unit drug utilization in a teaching hospital in Nepal. Kathmandu University Medical Journal(KUMJ).2005;3(2):130-7.
  20. Federal Ministry of Health, The Assessment of the Pharmaceutical Sector in Ethiopia Commissioned by the Federal Ministry of Health and conducted with the Financial and Technical Assistance of the World Health Organization, World Health Organization, Addis Ababa,Ethiopia,2003.
  21. World Health Organization, Promoting Rational Use of Medicines; Core Components, Policy Perspectives on Medicines, World Health Organization, Geneva, Switzerland, 2002.
  22. Patidar R, Pichholiya M. Analysis of drugs prescribed in emergency medicine department in a tertiary care teaching hospital in southern Rajasthan. *International Journal Basic and Clinical Pharmacology*. 2016;5(6):2496-9.
  23. Shinde RM, Kale A, Chube S, Sawant M. Drug utilization study in medical intensive care unit in a rural tertiary care teaching hospital in Maharashtra. *International Journal of Medical Science and Public Health*. 2017;6(4):733-7.
  24. Adhikari K, Phukan S. Drug utilization pattern in ICU in a tertiary health care institution. *International Journal of Basic & Clinical Pharmacology*.2018;7(7):1396-402.
  25. Mittal N, Mittal R, Singh I, Shafiq N, Malhotra S. Drug utilization study in a tertiary care center: Recommendations for improving hospital drug dispensing policies. *Indian Journal of Pharmaceutical Science*. 2014;76(4):308-14.
  26. Haas JS, Phillips KA, Gerstenberger EP, Seger AC. Potential savings from substituting generic drugs for brand-name drugs: Medical expenditure panel survey, 1997–2000. *Annals of Internal Medicine*. 2005;142(11):891-7.
  27. Generic Bulletin NMIC. Available from: <http://www.15no1 web with refs.pdf>. [Last accessed on 2016 Oct 25]
  28. Gardiner P, Dvorkin L. Promoting medication adherence in children. *The American Family Physician*. 2006;74(5):793–8.

**HOW TO CITE:** Viresh K. Chandur, Shreya S. \*, Ashitha Ephrem, Ramakrishna Shabaraya A., A Retrospective Observational Study To Determine The Percentage Of Drugs Prescribed By Generic Names In ICU Of A Tertiary Care Hospital In Dakshina Kannada, *Int. J. in Pharm. Sci.*, 2023, Vol 1, Issue 11, 234-239. <https://doi.org/10.5281/zenodo.10107374>

