



ASSESSMENT OF RATIONAL DRUG USE FOR HOSPITALIZED AND NON-HOSPITALIZED DIABETES, HYPERTENSION, AND DIABETES WITH HYPERTENSION PATIENTS USING WHO/INRUD CORE DRUG USE INDICATORS IN RURAL TERTIARY CARE TEACHING HOSPITAL, TAMILNADU, INDIA.

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ABSTRACT

The rational use of drug prescription must be closely examined for the best interests of patient welfare. With the help of the WHO-recommended core prescribing indicators, we hope to evaluate the prescription Behaviour and patterns of doctors at a teaching hospital in South India. Setting; This study was conducted in both inpatients and outpatients in Department of Medicine, SRM medical College Hospital, Katankulathur, which is 1350 bedded tertiary care teaching hospital. This prospective observational study was conducted to evaluate the performance of both Hospitalized inpatients and outpatients in three different diseases such as Diabetes, Hypertension and Diabetes with Hypertension. **Materials and Methods:** The standard core drug use indicator forms were used to collect the data. The WHO guidelines and indicators were observed to promote rational drug use. The study data was collected during the period from June 2022 to November 2022. **Data Analysis:** The data was analyzed using Microsoft Excel. **Conclusion:** Overall, this study's analysis based on the WHO core indicators revealed that reasonable medication usage was practiced. In this study, we came to the conclusion that polypharmacy, prescribing in brand names, excessive prescribing of new generation antibiotics, patients' lack of understanding about medications, and the unavailability of a few critical drugs were major factors in irrational drug usage.

KEYWORDS: WHO prescribing indicators, Inpatients, outpatients, polypharmacy, Diabetes with Hypertension.

INTRODUCTION

The most efficient method for assessing healthcare systems and encouraging logical recommendations is epidemiological research.^[1] According on the WHO core drug prescribing indicators, this study analyses prescriptions and displays the patients' drug use patterns. The use of reasonable drug prescription practises lowers patient financial burden while also lowering death and morbidity rates. Drug prescribing pattern studies are necessary to build an optimal instrument for the creation of high-quality prescribing and therapeutic care. The involvement of pharmacists and other medical specialists could accomplish this. The World Health Organization has developed a set of indicators to evaluate the effectiveness of healthcare workers. Another issue is the irrational use of drugs, which can be controlled with the help of WHO recommendations, which also support rational drug use.^[2] Unreasonable prescribing not only results in treatment failure but also burden, distress, anxiety, and higher costs. Rational prescription practises result in higher rates of death and morbidity. Having access to the medicines on the essential drug list not only enables patients to receive better therapeutic

care but also enables prescribers to ensure reasonable drug therapy.^[3]

In addition to inappropriate drug usage, polypharmacy is a significant source of worry for patients. To combat this, we adhere to a set of WHO (World Health Organization) indicators, which are as follows: a) Indicators for drug prescribing, b) Indicators for patient care, and c) Indicators for facility care. These signs aid in identifying the prescribers' prescribing mindset. It aids in determining the patients' drug intake status. This aids in the discovery of drug use, drug resistance, unintentional drug use, polypharmacy, and empirical therapy. The usage of medications, whether logical or irrational, was thought to be a major therapeutic issue in obtaining treatment effectiveness. More than 50% of medications are prescribed, distributed, or sold improperly globally, and 50% of patients don't take their medications as directed. Instead of that, roughly one-third of people worldwide lack access to basic medical care.^[4]

METHODOLOGY

This study was conducted in both inpatients and outpatients in Department of Medicine, SRM medical College Hospital, Katankulathur, which is 1350 bedded tertiary care teaching hospital. This prospective observational study was conducted to evaluate the performance of both Hospitalized inpatients and outpatients in three different diseases such as Diabetes, Hypertension and Diabetes with Hypertension. The standard core drug use indicator forms were used to collect the data. The WHO guidelines and indicators were observed to promote rational drug use. The study data was collected during the period from June 2022 to November 2022. Data consists of 380 prescriptions (143 prescriptions per from diabetes, 73 prescriptions from hypertension, 164 prescriptions from diabetes+hypertension). The total of 380 prescriptions collected

from hospitalized inpatients and the same patients were considered to be outpatients at their further follow ups during the 6 months (i.e., June 2022 to November 2022). Patients visiting the Out Patient department for diagnosis and treatment of health problems were invited to participate in the study. A total of 380 patients (30 patients per OPD) were randomly selected during the OPD hours. Trained data collectors explained the purpose of the study to the respondents and obtained their consent before data collection began. The consented patients were observed and interviewed to obtain the required information for three different disease conditions. For the facility-specific indicators, all available pharmacy personnel were invited to participate in the study and the consented participants were interviewed to obtain the required information.

RESULTS

WHO-CORE indicators assessed for Diabetes patients

	IP	OP	WHO standard (%)
Drug prescribing indicators			
Average drugs prescribed	11.1	5.2	1.8-1.8
% of drug prescribed by generic names	40.38	45.37	100
% of encounters with an antibiotics prescribed	38.25	19.13	20-26.8
% of encounters with an injection prescribed	48.70	3.94	13.4-24.1
% of drug from essential drug list	61.25	59.81	100
Patient care indicators			
Average consulting time (min)	12	6.40	-
Average dispensing time (sec)	287	173	-
% of drugs actually dispensed	71.75	77.25	
% of drugs adequately labelled	87	85	
Patient knowledge of correct dosage (%)	28.11	45.12	
Facility indicators			
Key drugs available (%)	48.72	52.75	
Availability of copy of Essential medicine list	Yes	Yes	

WHO-CORE indicators assessed for Hypertension patients

	IP	OP	WHO standard (%)
Drug prescribing indicators			
Average drugs prescribed	9	4.5	1.8-1.8
% of drug prescribed by generic names	47.1	51.51	100
% of encounters with an antibiotics prescribed	1.3	-	20-26.8
% of encounters with an injection prescribed	26.71	1.66	13.4-24.1
% of drug from essential drug list	55.28	53.62	100
Patient care indicators			
Average consulting time (min)	12.3	5.1	-
Average dispensing time (sec)	104	163	-
% of drugs dispensed	74.75	78.91	-
% of drugs adequately labelled	81	79	
Patient knowledge of correct dosage (%)	34.21	41.17	-
Facility indicators			
Key drugs available (%)	49.77	53.25	-
Availability of copy of Essential medicine list	Yes	Yes	

WHO-CORE indicators assessed for Diabetes+ Hypertension patients.

	IP	OP	WHO standard (%)
Drug prescribing indicators			
Average drugs prescribed	13.3	6.1	1.8-1.8
% of drug prescribed by generic names	42.75	56.78	100
% of encounters with an antibiotics prescribed	35.35	21.13	20-26.8
% of encounters with an injection prescribed	29.74	8.75	13.4-24.1
% of drug from essential drug list			100
Patient care indicators			
Average consulting time (min)	13.6	7.2	-
Average dispensing time (sec)	119	141	-
% of drugs dispensed	78.75	85.25	-
Patient knowledge of correct dosage (%)	32.51	43.92	
Facility indicators			-
Key drugs available (%)	47.54	52.11	
Availability of copy of Essential medicine list	Yes	Yes	-

(IP- Inpatients; OP- Outpatients)

Drug prescribing indicators**For Inpatients**

Diabetes- In this study total number of 143 prescriptions were reviewed and collected. Average of 11.1 drugs per prescription was seen during the study. In this study 40.38% of the drugs were prescribed by generic name and 38.25% of antibiotics were prescribed in the study. The total number of drugs prescribed in the form of injections in the study was 48.70%. The total number of drugs were from essential drug list were found to be 61.25%. Main reason for multiple drug therapy could be due to comorbid conditions in diabetic patients. For hypertension, 73 prescriptions were totally reviewed and collected. An average of 9 drugs per prescription was seen during the study. In this study 47.1% of the drugs were prescribed by generic name and 1.3% of antibiotics encounters were prescribed in the study. The total number of injections prescribed in the study was 26.71%. The total number of drugs were from essential drug list were found to be 65.28%. In this study total number of 164 prescriptions were reviewed and collected. An average of 13.3 drugs per prescription was seen during the study. In this study 42.75% of the drugs were prescribed by generic name and 35.35% of antibiotics encounters were prescribed in the study. The total number of injections prescribed in the study was 29.74%. The total number of drugs were from essential drug list were found to be 67.83%.

For Outpatients

Diabetes- In this study, the same patients were obtained as outpatients but total number of prescriptions were reviewed and collected was said to be with 135. Eight patients were excluded due to poor follow up. An average of 5.2 drugs per prescription was seen during the OP cases. In this study 45.37% of the drugs were prescribed by generic name and 19.13% of antibiotics were prescribed in the study. The total number of injections prescribed in the study was 3.9%. The total

number of drugs were from essential drug list were found to be 59.81%.

For patients with hypertension during outpatient visit, total number of 60 prescriptions were reviewed and collected. An average of 4.5 drugs per prescription was seen during the OP cases. In this study 51.5% of the drugs were prescribed by generic name and antibiotics encounters were not seen in outpatients. The total number of injections prescribed in the study was 1.66%. The total number of drugs were from essential drug list were found to be 53.62%.

For the patients with Diabetes Hypertension- Total number of 145 prescriptions were reviewed and collected during outpatient visit. An average of 6.1 drugs per prescription was seen during the OP cases. In this study 56.78% of the drugs were prescribed by generic name and 21.13% of antibiotics encounters were prescribed in the study. The total number of injections prescribed in the study was 8.75%. The total number of drugs were from essential drug list were found to be 57.12%.

Patient care indicators**For Inpatients**

Diabetes- The average consultation time for inpatients was 12 min. Consulting time was depends upon the severity of the disease and patients. The average dispensing time was 77 sec. for inpatients. The inpatient pharmacy was located near the medicine ward so it is easy to the patients to get medicines quickly. 71.75% drugs were actually dispensed, few medicines were brought from outside. Patient knowledge of correct dosage was 28.11%.

For patients with Hypertension- The average consultation time for inpatients was 12.3min. The average dispensing time was 64 sec. 74.75% drugs were

dispensed in the study. Patient knowledge of correct dosage was 34%.

Diabetes+Hypertension- The average consultation time for inpatients was 13.6 min. the average dispensing time was 79 sec. 78.75% drugs were dispensed and 78.75% were actually dispensed in the study. Patient knowledge of correct dosage was 32.51%.

For Outpatients

Diabetes- The average consultation time for outpatients was 6.4 min. The average dispensing time was 73 sec. 77.25% drugs were dispensed in the study. The outpatient pharmacy was located near the medicine op so it is easy for the patients to get medicines quickly. So the patients don't need to wait for long time. Patient knowledge of correct dosage was 45.12%. These things were observed and recorded in patient indicator form.

Hypertension- The average consultation time for inpatients was 5.1 min. The average dispensing time was 83 sec. 78.91% drugs were dispensed and 73.40% were adequately labelled in the study. Patient knowledge of correct dosage was 41.17%

For patients with Diabetes Hypertension- The average consultation time for inpatients was 7.2 min. The average dispensing time was 81 sec. 85.25% drugs were dispensed in the study. Patient knowledge of correct dosage was 43.92%

Facility Care Indicators

We evaluated that nearly (59.23%, 52.71%, 51.54%) of drugs were prescribed from WHO Essential Medicine List for hospitalized diabetes, hypertension and diabetic hypertension patients in this study. For outpatients with diabetes, hypertension and diabetic hypertension were said to be with (61.25%, 56.36, 59.33) respectively. It is very useful to improve the quality of life in Health Care provided through hospitals, and medicines were easily available at affordable price for the patients and to the society.

DISCUSSION

We assessed rational drug prescribing based on our findings and compared it to WHO guidelines. There was significant to excessive prescribing of antibiotics, and the average number of medications per prescription was somewhat greater than the acceptable range. Although the goal is to prescribe only generic names for all medications, almost 50% of them were. These conclusions were the root of several issues. In addition, polypharmacy can influence a higher risk of adverse effects, which can impair treatment outcomes. Additionally, individuals with chronic conditions may experience increased financial strain due to the prescription of needless medications and brand-name medications. The WHO sought to advance the use of generic medications over branded ones by promoting better drug knowledge and preventing communication

gaps between healthcare professionals.^[6] When compared to branded prescriptions, generic medications are fairly affordable and readily available. Due to comorbid disorders and the complexities of the three diseases, hospitalized individuals in this study required more than ten medications. Another problem for patients with diabetes and diabetes and hypertension in this study is the overuse of antibiotics, which increases the risk of bad medication responses, prolonged hospital stays, and antibiotic resistance. In this study, we discovered that hospitalized inpatients received higher prescriptions for medications in the form of injections.^[7] Patients in hospitals must receive their medications through injection because it promotes better absorption. In this trial, injectable medications such heparin, insulin, antibiotics, parenteral fluids, and certain antihypertensives were administered. However, injections are not necessary for outpatients, and only a small number of patients required insulin and other antibiotics, which were administered via injection. Although less than ideal values were prescribed, the majority of the medications were on the essential drug list.^[10] The current study shows that when compared to WHO guidelines, the typical consultation and dispensing times were found to be normal. This is below the suggested WHO standards. The greater number of patients visiting the IP& OPDs in this rural tertiary care teaching hospital may have contributed to the study's finding of short consultation and dispensing times. A lack of consultation time results in a bad history being taken, an incorrect diagnosis, and poor communication between medical specialists. According to our research, more patients during the outpatient follow-up than throughout the hospital stay were aware of the proper dosage.^[11] This is much below the ideal value of 100%, however following an inpatient stay, there was an improvement as a result of patient counselling and drug usage awareness raising. Correct dosage information is crucial for patients to avoid drug abuse and avoid negative drug reactions that can have a negative impact on their health and quality of life (8, 9). The total percentage of medications dispensed was quite similar to WHO criteria, in contrast to consultation, dispensing time, and patients' understanding of the proper dosage. This study demonstrated that healthcare workers followed the necessary rules to encourage sensible drug usage and were knowledgeable of the medications accessible in hospitals.^[12] The study's findings showed that every OPD had a copy of the EDL, which is in line with the recommended norm. However, there aren't many necessary medications available at these OPDs. When there is a lack of any important medications at the hospital, patients suffer because doctors may not be able to recommend the best medications or may only be able to recommend out-of-stock prescriptions, which may force the patients to pay extra "out-of-pocket" expenses.^[13]

CONCLUSION

The World Health Organization developed a number of health indicators that were used to encourage sensible drug usage. The length of the consultation varies on the patients' health and the disease's severity. Patients can easily obtain medications fast because the inpatient pharmacy is next to the medicine ward. Patients can easily obtain medications fast because the outpatient pharmacy is close to the medical office. As a result, the patients don't have to wait long. Most drugs between 75 and 80 percent were genuinely given out very few medications were imported. The majority of the medications in the study had clear labels. These events were noticed and noted in the form of patient indicators. After being discharged from the hospital, patients received counselling that helped to enhance their awareness of the proper dosage, which was found to be poor. In this study, we estimated that roughly half of the medications were recommended from the WHO Essential Medicine List. The main medications used in this investigation were discovered to be healthy. The health care given by hospitals greatly improves the quality of life for patients, and medications are freely accessible for both patients and society at reasonable prices. In this study, frequent usage of various medicines was seen, which may be related to the disease state's chronic status. Drugs like atorvastatin and fenofibrates were suggested for the treatment of dyslipidemia and to lower lipid levels. Telmisartan, Enalapril, and furosemide were frequently used in patients with diabetes and hypertension. In this study, sulfonylureas like glimepiride and glibenclamide came in second place after metformin as the most frequently prescribed first-line medication for diabetes. According to national and local lists, these medications were deemed vital, hence this study followed best practices for medication use. In this study, patients with diabetes and diabetes with hypertension received injections on a regular basis. And it was discovered that outpatients had very low injection rates; as a result, it has been considered sensible prescribing and has improved treatment outcomes and adherence rates. In this investigation, people with diabetes and diabetes with hypertension had greater rates of antibiotic contacts. Overall, this study's analysis based on the WHO core indicators revealed that reasonable medication usage was practiced. In this study, we came to the conclusion that polypharmacy, prescribing in brand names, excessive prescribing of new generation antibiotics, patients' lack of understanding about medications, and the unavailability of a few critical drugs were major factors in irrational drug usage.

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