Research Article

Assessment of Drug Use in a Tertiary Hospital in Southeast Nigeria Based on Who Core Drug Use Indicators

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Abstract

Background: Irrational use of medicines is a global phenomenon and an issue of concern with so many undesirable consequences. The complex nature of the pharmaceutical care process is an indication for an essential tool that investigates drug use pattern in health facilities. The WHO released the core drug use indicators to address these issues. The study assessed drug use in a tertiary hospital in southeast Nigeria based on WHO core drug use indicators.

Methods: A cross-sectional descriptive study design was used and the study was conducted from October 2021 to June 2022. Retrospectively, 300 prescriptions were selected and reviewed using systematic random sampling for a year from 2020 -2021 to investigate prescribing indicators. A total of 120 randomly selected patients and pharmacy personnel were observed and interviewed to investigate the patient-care and facility-specific indicators. The WHO/INRUD core drug use indicators were used to assess the patterns of drug use in comparison to the result gotten.

Results: The average number of drugs per encounter was 2.76, the Percentage of drugs prescribed by generic names was 78.02%, the Percentage of antibiotics prescribed was 33.33%, and the Percentage of injections prescribed was 1.67%. Average consulting time in minutes was 17.5 minutes, the average dispensing time in seconds was 92.1 seconds, the Percentage of drugs actually dispensed was 76.97%, Percentage of adequately labeled was 100%, and the percentage of patients' knowledge of correct dosage was 90%. The facility did not have an Essential Drug List but had all (100%) the key drugs listed by the WHO drug list.

Conclusion: All of the prescribing indicators deviated from the WHO/INRUD recommended optimal values. Patient-care and facility-specific indicators deviated from the optimal values except that of the average consultation time, average dispensing time, percentage of drugs adequately labeled, and 100% availability of key drugs. Although a few of the WHO benchmark for rational drug use were met, the outcomes were not satisfactory and required interventions to improve rational drug use in the facility.

Keywords: Drug utilization; Indicators; Public Health; Health Facilities; Essential Medicines; Rational Drug Use; Poly Pharmacy

Abbreviations

WHO: World Health Organization, COOUTH: Odumegwu Ojukwu University Teaching Hospital; EML: Essential Medicines; INRUD: International Network for Rational Use of Drugs

Introduction

Medicines are integral parts of the health care system and modern health care is unthinkable without the availability of necessary medicines [1]. Medicine not only saves lives and promoteshealth but prevents epidemics and diseases too. Medications are undoubtedly one of the weapons of mankind to fight disease and illness [2]. Accessibility to medication is a fundamental right of every person. Irrational Use of Medicines is a global phenomenon and it is not specific to a particular region, rather it may vary from one region or health setting to another. Rational use of drugs may be defined as an act whereby patients receive the right medications for their clinical needs, in the right doses that meet their requirements, for the right period, and the most cost-effective to them and their community [3].

Rational drug use is essential to provide better health and medical care to patients and the community as a whole. Inappropriate use of drugs is an issue of concern with so many undesirable consequences such as the increased incidences of drug resistance, adverse drug reactions, cost of drug therapy, wastage of resources, and reduced quality of drug therapy [4]. Irrational use of drugs leads to serious consequences in healthcare settings and economics wise. Worldwide more than 50% of all medicines are prescribed, dispensed, or sold inappropriately, while 50% of patients fail to take them correctly. Moreover, about one-third of the world's population lacks access

to essential medicine [5]. Due to the complexity of drug use, it is important to be assessed so that problems may be identified and interventional strategies implemented to keep in the unsafe trends in drug utilization.

The complex nature of the pharmaceutical care process is an indicator that there should be an essential tool that investigates drug use patterns in health facilities. In the past decades, the WHO has organized a conference in Nairobi and developed core and complementary drug use indicators. Core drug use indicators are more informative and feasible, less likely to fluctuate over time and place, and provide a simple tool for quickly and reliably assessing drug use than complementary indicators [6]. The need for the assessment of drug use using WHO core drug use indicators arose because it has been presumed that more than half of all medicines are prescribed and dispensed improperly resulting in problems of polypharmacy, antibiotic resistance, and lots of patients fail to take them correctly as some of them have little to no knowledge about the medicines they take, hence, the needsto authenticate this notion.

Essential medicines are those that satisfy the priority health care needs of the population. Using an essential drug list makes medicine management easier in all respects; procurement, storage and distribution are easier with fewer items, and prescribing and dispensing are easier for professionals if they have to know about fewer items. A national essential drug list should be based upon national clinical guidelines [7]. Medicine selection should be done by a central committee with an agreed membership, and using explicit, previously agreed criteria, based on efficacy, safety, quality, cost (which will vary locally) and cost-effectiveness. EMLs should be regularly updated and their introduction accompanied by an official launch, training and dissemination [7]. Public sector procurement and distribution of medicines should be limited primarily to those medicines on the EML, and it must be ensured that only those health workers approved to use certain medicines are actually supplied with them. Government activities in the pharmaceutical sector (e.g. quality assurance, insurance reimbursement policies, and training), should focus on the EML. The WHO Model List of Essential Medicines can provide a starting point for countries to develop their national EML

The list is made with consideration to disease prevalence, efficacy, safety and comparative cost-effectiveness of the medicines. They should be available in such a way that an individual or community can afford them. Drawing an Essential Medicine List (EML) is expected to result in better quality of medical care, a better management of medicines and cost-effective use of healthcare resources. This is especially important for a resource-limited country. The list of essential medicines is intended to have a positive impact on the availability and rational use of medicines [8]. Availability of key drugs - The purpose is to measure the availability at health facilities of key drugs recommended for the treatment of some common health problems [9].

Essential medicines are those that satisfy the priority healthcare needs of the population, selected based on evidence on efficacy and safety, comparative cost-effectiveness, and public health relevance [10]. Rational drug use is defined based on the "five rights" Patients should receive the right medications appropriate to their clinical needs, at the right dose, for the right period, at the lowest possible cost

to them and their community. Enhancing the standards of medical treatment at any healthcare system can improve the quality of life in developing countries [3]. Appropriate treatment of commonly occurring diseases, and injuries, and the provision of essential drugs are the two vital components of the primary health care concept as per the Alma-Ata declaration [8]. Irrational use of medicines may lead to serious negative health, and economic consequences. Overuse, polypharmacy and incorrect use of drugs are the most common problems of drug use today. The problem of inappropriate use of drugs seems to be copious, therefore, the basis of this study will be to measure specific aspects of the behaviour of health providers in health facilities and investigate drug use patterns in a reproducible manner irrespective of who measures them, and when the measures are taken by employing the WHO/INRUD core drug use indicators. We assessed drug use in a tertiary hospital based on WHO core drug use indicators and generated information for interventions.

Methods

Study Design

This is a cross-sectional descriptive study of prescriptions from the Medical Out Patient Department of the hospital.

Study Setting

This study was performed in a tertiary hospital in Anambra State namely Chukwuemeka Odumegwu Ojukwu University Teaching Hospital (COOUTH), Awka. It is owned by the State Government and situated in Awka metropolis, with 10 departments and 294 beds capacity in the main hospital annex.

Sample Size Determination

The sample size for assessing prescribing indicators was based on WHO recommendation where at least 100 encounters should be included in the survey by taking the retrospective nature of the study [1,6].

Sampling Technique

The number of health facilities includes all eligible and complete prescriptions which were selected by systematic random sampling from prescriptions dispensed over a year. At least 30 cases per health facility are recommended by WHO in WHO/INRUD patient care indicators. In this study, a total of 30 patients were included. A simple random sampling technique was used to recruit study participants. Moreover, the pharmacy head in the selected health facility was included for WHO/INRUD health facility indicators assessment as they are supposed to be rich in key information [11].

Study Duration

The study lasted from October 2021 to July, 2022.

Ethical Consideration

Before commencement of the study, ethical approval for the study protocol was obtained from the Research and Ethics Committee of Chukwuemeka Odumegwu Ojukwu University Teaching Hospital (COOUTH) Awka in Anambra State.

Data Collection

A structured data collection tool was adopted from the WHO core medicine use indicator was used to collect data [1,6].

Study Criteria

Inclusion criteria: prescriptions issued and signed in the hospital within the last three years which were eligible, complete and written in English Language.

Exclusion criteria: Prescription written within the period under review which were incomplete.

Data Analysis

Thedata collected wasanalyzed with the aid of Statistical Package for Social Science (SPSS version 20.0 for Windows, Inc., Chicago, IL, USA) software. Descriptive statistics eg frequencies, percentages, proportion, mean and standard deviation was utilized.

Results

Prescribing Indicators

For this study, 300 prescriptions were analysed with the total number of 828 drugs prescribed. The average number of drugs per encounter was 2.76. The percentage of drugs prescribed by generic names was 78.02%. The percentage of encounters with an antibiotic was 33.33%. The percentage of encounters with an injection was 1.67%.

A single drug is prescribed in 62 prescriptions, 79 prescriptions contain two drugs, 74 prescriptions contains three drugs and 85 prescriptions contains four and more drugs.

Patient Care Indicator

The average consultation time 17.5 minutes while the average dispensing time was 92.1 seconds. The total number of drugs prescribed was 178 and from this 76.97% was actually dispensed and 76.97% was adequately labeled.

There was no essential drug list or formulary in the hospital. All the drugs from the key drug list were present.

Key Drugs – model list for testing drug availability

1. Oral rehydration salt
2. Cotrimoxazole tablet
3. Procaine penicillin injection
4. Paracetamol tablet
5. Chloroquine tablet
6. Artemether/lumefantrine tablet
7. Ferrous salt + folic acid tablet
8. Mebendazole tablet
9. Tetracycline eye ointment
10. Iodine, gentian violet
11. Acetylsalicylic acid tablet
12. Retinol (vitamin A)
13. Benzoic acid + salicylic acid ointment

Discussion

The availability of qualified prescribers and dispensers and

Table 1: Values of WHO core prescribing indicators obtained in the study.

No	Prescribing Indicators	Result
1.	Total number of encounters	300
2.	Total number of drugs	828
3.	Average number of drugs per encounter	2.76
4.	Percentage of drugs prescribed by generic names	78.02%
5.	Percentage of antibiotics prescribed	33.33%
6.	Percentage of injections prescribed	1.67%

Table 2: Values of WHO patient care indicator.

S/N	Patient care indicators	
1	Average consulting time in minutes	17.5 minutes
2	Average dispensing time in seconds	92.1 seconds
3	Total number of drugs prescribed	178
4	Number of drugs actually dispensed	137
5	Percentage of drugs actually dispensed	76.97%
6	Number of drugs adequately labeled	137
7	Percentage of adequately labeled	100%

Table 3: Values of WHO facility indicator.

S/N	Facility indicator	Values
1	Availability of essential drug list or formulary	No
2	Percentage availability of key indicator drugs	100%

adequate supply of key drugs and drug information, such as essential drug list/formulary in any healthcare center, influence the ability to rationally prescribe and dispense drugs. Without these factors, it is difficult for healthcare workers to provide health services efficiently. The average number of drugs prescribed per prescription was 2.76 which was slightly lower when compared to 2.9 in Kenya but above the normal range recommended by the WHO to be 1.6 - 1.8, this indicated the practice of polypharmacy [11].

The percentage of drugs prescribed by generic names was 78.02% which was higher when compared to 27.7% in Kenya, but below the WHO recommended value of 100%.This might be attributed to prescribers' belief in branded drugs over generic products, extensive promotional activities by drug companies' and medical representatives to the prescribers, or absence of national policy on generic prescribing. The percentage of antibiotics prescribed was low in comparison to a study in Kenya, but higher than the WHO recommended value of 20.0 – 26.8%. It suggested the overuse or misuse of antibiotics which is a cause of antibiotic resistance and wastage. The percentage of injections prescribed was 1.67% which was much lower in comparison to 24.9% in Kenya but much lower than the WHO recommended value of 13.4 – 24.1% [11] which indicates low use of injectable medications.

The quality of disease diagnosis and management is determined by the time devoted to the patients by the healthcare providers. Average consultation time was 17.5 minutes which was higher when compared with Kenya at 4.1 minutes but in line with another study conducted in Nigeria at 11.3 minutes and the WHO recommended value of ≥10 minutes [11]. To ensure good patient care, prescribers

need to take sufficient time with patients in order to carry out comprehensive history taking, patient examination, provide suitable health education, and ensure good clinician-patient rapport. The average dispensing time was 92.1 seconds which was higher when compared with northwest Ethiopia at 62.72 seconds but in line with the WHO recommended value of ≥90 seconds. Sufficient dispensing time is required to explain key information about the drug(s) such as name of the drug, dosage, duration and adverse effects to the patient as well as adequately label the drug(s) and dispense them to patient.

The percentage of drugs actually dispensed was 76.97% which was lower when compared with Northwest Ethiopia at 94.2% and WHO recommended value of 100%. This could be an indication that some drugs may have been out of stock or the rationality of drug use in terms of optimum cost. The Percentage of drugs actually labeled was 100% which was higher when compared to Northwest Ethiopia at 96.3% but in line with the WHO recommended value at 100% [12]. Inadequate labeling results in poor information on drug use and poor compliance with the dose regimen. The Percentage of patients' knowledge of correct dosage was 90% which was higher when compared with Pakistan at 61.6% but lower than the recommended value at 100% [13]. The Patients knowledge about correct dosage is significant in the therapeutic process to avoid abuse of drugs. Though this study addressed the name of the drug, dose, frequency and duration, the knowledge of the patients on side effects, reason for taking the drug and drug interactions should also be assessed.

The result of the study for facility indicators revealed the absence of any essential drug list or formulary but in the process of getting one, as the presence of essential drug list is aimed at ensuring prescribers adherence to the drugs listed in the EDL when prescribing to promote the efficient provision of healthcare to patients. Similar result was seen in study conducted in Northwest Ethiopia as opposed to the WHO recommendation [12]. They had all the key drugs listed by the WHO drug list which is in line with the WHO recommendation but higher in comparison to a study in Pakistan which had 72.4% [13]. The shortage of key drugs is detrimental to patients with regard to their health status and out-of-pocket expenses.

Conclusion

All of the prescribing indicators deviated from the WHO/INRUD recommended optimal values, indicating practices of irrational drug use such as the practice of polypharmacy and misuse or overuse of antibiotics. Patient-care and facility-specific indicators were also deviated from the optimal values except that of the average consultation time, average dispensing time, percentage of drugs adequately labeled and 100% availability of key drugs. Although a few of the WHO benchmark for the rational drug use were met, the results were not satisfying and requires interventions to improve rational drug use in the facility.

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