Research Article

Assessment of WHO's Drug Use Indicators at Private Tertiary Care Setting of Karachi, Sindh, Pakistan

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ABSTRACT

The objective of this study is to assess the drug indicators of World Health Organization at a private tertiary care hospital of Karachi, Sindh, Pakistan. A cross sectional study was conducted in the out patients departments (OPDs) of a private tertiary care teaching hospital of Karachi for the period of 8 month, April -December 2019. Data collection from the out patients departments was compared with the WHO guidelines. A total 500 prescriptions from each hospital was analyze by the systematic random sampling technique to avoid and minimize the biasness in the data that may occur due to interruptions in supply cycle of drugs or seasonal variations. Out of 500 Prescriptions, the frequency of male gender was 317, while the frequency of female patients was 183. Out of 500 prescriptions, 124 (24.8%) of the prescriptions had 50-59 years of age followed by 40-49 years with frequency of 107 prescriptions To evaluate the prescribing indicators, number of drugs per prescriptions i.e. 39 (7.8%) of prescriptions had one drug, 65 (13%) of prescriptions had two drug, 154 (30.8%) of prescriptions had three drug and 242 (48.4%) of prescriptions had four or more than four drugs per prescriptions. The second parameter was average number of drugs per encounter and the results were showed that 4.57 drugs per encounter while WHO recommendations were less than 2. Data showed that averagely 8.43 minutes was consultation time to each patient while 6.28 minutes were averagely dispensing time. In one prescription 4.8 number of drugs averagely present. The fourth indicator showed that 85.93% of the drugs were averagely dispensed and 72.32% were adequately labeled. The sixth and last patients indicator showed that 60.77% of the patients were know the dosage of their medicines. It was concluded that the WHO indicators were not followed according to guidelines. Proper Training will be required to all health care staff for understanding the core drug indicators. CMEs will also be arranged for proper Education.

Keywords: WHO, Core Drug, Prescribing Indicators, Tertiary care, Rational.

INTRODUCTION

World health organization/ International Network of Rational Use of the Drugs (WHO/INRUD) has developed the evaluating tool i.e. indicators of drug use in generally three different areas associated with rational drugs use as measure of performance in the health providing settings in different health care settings. They are commonly known as core drug indicators [1]. The core drug indicators are considered as more informative, more viable and with lesser chances of variations and fluctuation over the time, place, and also easier to evaluate the use of drugs than other standards i.e. complimentary indicators[2,3]. Pharmaceutical drugs are primary therapeutic interventions and their proper use in outpatients and inpatients provided to the patients inside the health providing settings and within communities. Pharmaceutical drugs do not only provide the therapeutic interventions to the specific health condition but rational use of pharmaceutical products plays an important role in the sufficiency of therapeutic interventions and efficacy[4]. A massive development happening in the field of pharmacy has proceeded into a drugs-explosion in few past decades. Aggressive elevation in the numbers of drugs available has changed and customized the ways with which the drugs are manufactured, offered and confided by laws. The impact of An extension of therapeutic stock also follows the compulsion applied by the drug manufacturer in search to ensure the stable expansion in the markets[5]. Knowledge, experience therapeutic techniques and specialized art is required in the use of medicinal products, while in addition there are various non-medical factors associated with use of drugs that manipulate the drug prescribing and pattern of drug used[6]. A research concluded that nearly one third of world's population has fall through to receive the medicines which are essential to the medical care and most essential element in achieving the best quality of the health and medical care of the patients in the community is achieved through the appropriate use of the drugs. WHO concluded that rational use of drug is considered when, patients receives the best drugs according to clinical need with the dose that matches to their individual requirement for an adequate period of time and with the lowest possible cost in the community. [7] Major concern of worldwide is irrational use of the drugs currently. Patient's lack of confidence in a health proving system is considered as one of the essential element irrational use of medicines. Inadequate drug policies and limited resources can exacerbate the problems in developing country like Pakistan[8]. Most Researches showed that above 50% of the medicines are prescribed inaccurately or almost 50% of the patients fail to use the

drugs appropriately. According to estimation 10%- 20% of the national budget is for the medicines in developed countries While 20% to 40% of the budget is spent on the medicines in developing countries [9-10]. High cost followed by Inappropriate use of drugs, the developing countries face more problems than the developed countries due to limited resources, undeveloped and lack of organized policies for drugs [11]. Under prescribing, over prescribing, no indicated drug prescription, and unreasonable use of expensive medicines as well as unnecessarily use of antibiotics are also the examples of irrational prescribing[12-13]. The common phenomenon among the under developed countries is irrational use of drugs that can cause poor or costly health services[14]. Irrational drug use is basically selected on the basis of prevailing of the disease condition, their cost effectiveness ratio(pharmaco-economics analysis) risk benefit ratios as well as the drugs prescribed by their generic names can elevate affordability as well as availability of the drugs [2,15]. Overall, the compliance with WHO core indicators were low in some studies so proper training and knowledge provided to all health care professionals may help in complying the rules. [16-17]. Among the various problems caused by irrational drugs use is deficient of patient's confidence on the health providing settings, but this problem can elevate in the developing countries like Pakistan due to limited resources and inadequate drugs[18]. The objectives of current study are following: To assess by using the World health organization/international network of rational use of drugs (WHO/INRUD) core drug use indicators specifically prescribing and patients care indicators in private tertiary care health proving setting of metropolitan city.

METHODOLOGY

A cross sectional study was conducted in the out patients departments (OPDs) of a private tertiary care teaching hospitals of Karachi for the period of 8 month, April - December 2019. Data collection from the out patients departments was compared with the WHO guidelines and core drug indicators and methodology of WHO to ensure the consistency of data collected from the OPDs (WHO., 1993). The prescriptions collected from patient's medical records from different OPDs were photographed, and collected prescriptions were screened for the World Health Organization (WHO) guidelines for prescription writing. Therefore, total 500 prescriptions from each hospital was analyze by the systematic random sampling technique to avoid and minimize the biasness in the data that may occur due to interruptions in supply cycle of drugs or seasonal variations. For facility indicators two important components were evaluated i.e. adequate supply of essential drugs to the hospital pharmacy and current availability of key drugs in health facility. Direct observational technique was used to calculate the time for consultation, total time spent on dispensing, and actually dispensed drugs accounts for patients care indicators. i.e. poly pharmacy and degree of encounters with antibiotic(s), encounters with injection(s) prescribing by generic name (%) prescription from EDL (%) and environment of health care system is included as independent variables.

RESULTS

Out of 500 Prescriptions, the frequency of male gender was 317 and its percentage was 63.4% while the frequency of female patients was 183 with 36.6 percentage as shown in table 1.

Table 1: Prescriptions based on gender

Gender	Frequency	Percentage (%)
Male	317	63.4
Female	183	36.6
Total	**500**	**100**

Table 2 showed the prescriptions classification based on age. Out of 500 prescriptions, 124 (24.8%) of the prescriptions had 50-59 years. While 21.4% (n=107) was 40-49 years old. The remaining frequencies and percentages were mentioned in table 02.

Table 2: Age Distribution

Age (Years)	Frequency	Percentage (%)
10-19	27	5.4
20-29	61	12.2
30-39	84	16.8
40-49	107	21.4
50-59	124	24.8
≥60	97	19.4
Total	**500**	**100**

Table 3 demonstrated the prescribing indicators based on collected data. The parameters for evaluating the prescribing indicators showed per prescriptions i.e. 39 (7.8%) of prescriptions had one drug, 65 (13%) of prescriptions had two drugs, 154 (30.8%) of prescriptions had three drug and 242 (48.4%) of prescriptions had four or more than four drugs per prescriptions. The results showed 4.57 average drugs/encounter, WHO recommendations were less than 2. The third parameters were percentage of generic drugs in prescriptions and the results were only 14.5% prescriptions had generic prescriptions while WHO claims that it should be 100%.

The fourth parameter was percentage of antibiotics in prescriptions and the results were 43.11% of antibiotics were prescribed out of total 2289 drugs while WHO claims that less than 30% of the antibiotics were prescribed out of total prescriptions, and injectables in prescription and the results showed that 23.89 % (n=547) of the drugs were in injectable and WHO claims were less than 25% so it was according to WHO.

Table 3: Prescriptions evaluation, and World Health Organization's indicator of Prescribing

WHO Prescribing Indicators	Frequency	Percentage
Total Numbers of Drugs per prescription		
1	39	7.8%
2	65	13%
3	154	30.8%
≥4	242	48.4%
The Avg. No. of drugs in each prescription	4.57 drugs/Prescription	
Percentages of generic drugs in Prescriptions	319	14.5%
Percentage of Antibiotics in Prescriptions	987	43.11%
Percentage of injectable drugs in Prescriptions	547	23.89%

Table: 4: Prescriptions evaluation based on WHO Patient care Indicators

WHO Patient care Indicators	Result
The recorded consultation Time for each patient (Average)	8.43 Min
The recorded dispensing Time for each patient (Average)	6.28Min
Numbers of drugs prescribed to each patient (Average)	4.8 Drugs
Percentages of actually dispensed drugs	85.93%
Percentages of adequately labeled drugs	72.32%
Patients who knew the doses of their prescribed drugs	60.77%

Table 04 showed the evaluation of prescriptions based on WHO patient care indicator. There are six patient care indicators. The data showed that averagely 8.43 minutes was consultation time to each patient while 6.28 minutes were averagely dispensing time.

In one prescription 4.8 number of drugs averagely present. The fourth indicator showed that 85.93% of the drugs were averagely dispensed and 72.32% were adequately labeled. The sixth and last patients indicator showed that 60.77% of the patients were know the dosage of their medicines.

Table 5 showed the class of drugs prescribed to each patient. The total 2289 drugs were prescribed in 500 prescriptions. Out of 2289 prescription, 987 (43.12%) were belonged to antibiotics, 209 (9.13%) were belonged to antidiabetics, 215 (9.4%) were belonged to antihypertensive, 228 (9.96%) were belonged to antilipidemic, 110 (4.80%) were belonged to cardiovascular drugs, 144 (6.3%) were belonged to analgesics, 163 (7.12) were belonged to multivitamins, 175 (7.64%) were belonged to antihistamines and 58 (2.53%) were belonged to other various groups.

Table 5: Class of Medications Prescribed

Medications Class	Frequency	Percentage (%)
Antibiotics	987	43.12
Antidiabetics	209	9.13
Antihypertensive	215	9.4
Antilipidemic	228	9.96
Cardiovascular Drugs	110	4.80
Analgesics	144	6.3
Multivitamins	163	7.12
Antihistamines	175	7.64
Others	58	2.53
Total	**2289**	**100**

DISCUSSIONS

The current study evaluated the basic drug use indictors at tertiary care setups of Karachi. Out of total 500 prescription the 24.8% of the prescriptions had 50-59 years of age. years with frequency where 21.4% patients were with age of 40-49 years of age. In accordance with the study conducted at tertiary care setup.[19] the prescription was evaluated for prescribing indicators number of drugs per prescriptions found 7.8% of prescriptions had one drug, 13% of prescriptions with two prescribed drugs, 30.8% of prescriptions with three drugs, where 48.4% prescriptions with four drugs.[20] The second parameter was average number of drugs were 4.57.[21] drugs per encounter while WHO recommendations were less than 2. The average of drugs prescribed with generic names were only 14.5%. [22] Various studies have been conducted to assess the WHO patient's facility care indicators, similar to the studies conducted, where in data it showed 8.43 minutes was the total consultation time in average,[23] while average dispensing time was 6.28 minutes.[24] Among 500 total Prescriptions 43.1% prescribed drugs were antibiotics, which is greater than the suggested percentage by WHO, i.e. 30%. whereas total prescribed drugs were 2289 in numbers, similar study conducted on WHO's indicators. The total injectables drugs were analyzed and percentage was 23.8%,[25] which is in accordance to the percentage suggested by WHO.

CONCLUSION

It was concluded that the WHO indicators were not followed according to guidelines. Proper Training will be required to all health care staff for understanding the core drug indicators. CMEs will also be arranged for proper knowledge dissemination.

REFERENCES

1. Basger, B. J., Chen, T. F., & Moles, R. J. Inappropriate medication use and prescribing indicators in elderly Australians. Drugs & aging, 25(9), 2008, 777-793.
2. Ofori-Asenso R, Brhlikova P, Pollock AM. Prescribing indicators at primary health care centers within the WHO African region: a systematic analysis (1995–2015). BMC Public Health.,16, 2016, 724.
3. Ofori-Asenso R, Adom Agyeman A. Irrational use of medicines—a summary of Key concepts. Pharmacy, 4(4), 2016, 35.
4. Aliasghar Karimi, Malikeh Haerizadeh, Fatemeh Soleymani, Mahshid Haerizadeh et. al., Evaluation of medicine prescription pattern using World Health Organization prescribing indicators in Iran: A cross-sectional study, Journal Research Pharmaceutical Practice. 3(2), 2014, pp 39–45.
5. Assen A, Abrha S., Assessment of drug prescribing pattern in Dessie Referral Hospital, Dessie. Int J Pharm Sci Res, 5, 2014, 77-81.
6. Lenjisa JL, Fereja TH., A retrospective analysis of prescribing practices through WHO prescribing indicators at four selected hospitals of West Ethiopia. J Bioanal Biomed, 6, 2014, pp.29-30.
7. Ola A. Akl Azza A. El Mahalli, Ahmed Awad Elkahky et. al., WHO/INRUD drug use indicators at primary healthcare centers in Alexandria, Egypt, Journal of Taibah University Medical Sciences, 9(1), 2014, 54-64.
8. Akhtar M, Vohora D, Pillai K, Dubey K et. al., Drug prescribing practices in paediatric department of a north indian university teaching hospital. Asian J Pharm Clin Res; 5(1), 2012, pp.146-149.
9. Lapotte, JR., Baksaas, I. and Lunde, P.K.M 2013., General background. In: Drug Utilization studies: Methods and uses. Dukes, MNG. (ed). Copenhagen, WHO Regional Office, pp. 5-22.
10. Sadeghian GH, Safaeian L, Mahdanian AR, Salami S et. al. Prescribing quality in medical specialists in Isfahan, Iran. Iran J Pharm Res.12, 2013., pp.235–41.
11. Otoom, S., Batieha, A., Hadidi, H., Hasan, M., & Al Saudi, K. (2002). Evaluation of drug use in Jordan using WHO prescribing indicators. EMHJ-Eastern Mediterranean Health Journal, 8 (4-5), 2002, 537-543.
12. Desalegn, A. A. Assessment of drug use pattern using WHO prescribing indicators at Hawassa University teaching and referral hospital, south Ethiopia: a cross-sectional study. BMC health services research, 13(1), 2013, 1-6.
13. Lima, M. G., Dutra, K. R., & Martins, U. C. M. Prescribing indicators in primary health care in Belo Horizonte, Brazil: associated factors. International Journal of Clinical Pharmacy, 39(4), 2017, 913-918.
14. Bilal AI, Osman ED, Mulugeta A. Assessment of medicines use pattern using World Health Organization's prescribing, patient care and health facility indicators in selected health facilities in eastern Ethiopia. BMC Health Serv Res., 16, 2016, 144.
15. Tsega B, Makonnen E., Comparative evaluation of drug prescription appropriateness in public and private health institutions of south west Ethiopia: The case of Wolkite Town. IJPSR, 2012, Pp. 4922-4928.
16. Gurudeo N. Singh Neeraj Kumar And Prashant Mathur., To Assess the Drug Utilization Pattern and To Analyze Pharmacoeconomics For Geriatrics In-Patient in Medicine Department Of Tertiary Care Teaching Hospital, World Journal Of Pharmacy And Pharmaceutical Sciences, 6;8, 2017, pp: 2675-2688.
17. H.S. Babar, S. Hussain, Z. Maqsood, H.A. Dad, M. Khan et. al., Adherence to Prescription Format and Compliance with Who Core Prescribing Indicators, J. Pharm. Sci. & Res. Vol. 6(4), 2014, pp.195-199.
18. WHO., 1993, How to investigate drug use in health facilities: selected drug use indicators – EDM research series No. 007. [cited 28.04.2018].
19. Dong, L., Yan, H., & Wang, D. Drug prescribing indicators in village health clinics across 10 provinces of Western China. Family practice, 28(1), 2011, 63-67.
20. El Mahalli, A. A. WHO/INRUD drug prescribing indicators at primary health care centres in Eastern province, Saudi Arabia. EMHJ-Eastern Mediterranean Health Journal, 18 (11), 2012, 1091-1096.
21. Basger, B. J., Chen, T. F., & Moles, R. J. Inappropriate medication use and prescribing indicators in elderly Australians. Drugs & aging, 25(9), 2008, 777-793.
22. Campbell, S. M., Cantrill, J. A., & Roberts, D. Prescribing indicators for UK general practice: Delphi consultation study. Bmj, 321(7258), 2000, 425.
23. Al-Niemat, S. I., Bloukh, D. T., Al-Harasis, M. D., Al-Fanek, A. F., & Salah, R. K. Drug use evaluation of antibiotics prescribed in a Jordanian hospital outpatient and emergency clinics using WHO prescribing indicators. Saudi medical journal, 29(5), 2008, 743-748.
24. Angamo, M. T., Wabe, N. T., & Raju, N. J. Assessment of patterns of drug use by using World Health Organization's prescribing, patient care and health facility indicators in selected health facilities in Southwest Ethiopia. Journal of applied Pharmaceutical science, 1(7), 2011, 62.
25. Karimi, A., Haerizadeh, M., Soleymani, F., Haerizadeh, M., & Taheri, F. Evaluation of medicine prescription pattern using World Health Organization prescribing indicators in Iran: A cross-sectional study. Journal of research in pharmacy practice, 3(2), 2014, 39.

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