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Drug use pattern in health care centers of District Bhakkar, Pakistan

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Abstract

According to WHO, Drug utilization research is defined as 'the marketing, distribution, recommendation and utilize of drugs in a society, with particular focus on the resulting medical, social and economic results. In many developed countries, a number of studies about utilization of drug have been conducted, which indicates a wide proof of irrational drug use. The drug use indicators are considered as objective measures that can be extended to identify practices of medicines utilization in any health facility, country or an entire region. To check the drug utilize pattern in Primary Health Care (PHC) facilities of Bhakkar district Punjab Pakistan. Using WHO core drug use indicators, a prospective cross-sectional descriptive study was carried out in health facilities of Bhakkar district. A total of 40 prescriptions were analyzed. The average age of patients visiting HC centers was 33.11 years (female 35.79; male 30.40). 3.65 was the average number of prescribed drugs. 27% was the percentage of encounters with at least one prescribed antibiotic whereas 35% was the percentage of encounters with at least one prescribed injection prescribed, which was low. 25% is the total percentage of drugs given using generic names was noticed. The average consultation and dispensing time of 40 prescriptions was 2.02 minutes and 42.52 seconds. The study demonstrates that trend toward irrational practice mainly on use of antibiotics and non-generic prescribing in most of health facilities studied. Patient care given by health facilities studied was inadequate and thus for encouragement of rational drug use practice, an effective intervention program is recommended.

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Introduction

Study of drug use pattern is an essential measure in order to access drug utilization. According to WHO, Drug utilization research is defined as the marketing distribution, recommendation and utilize of drugs in a society, with particular emphasis on the resulting medical, social and economic consequences (Dutta *et al*., 2015; WHO. 2004). In many developed countries, a number of studies about utilization of drug have been conducted, which indicates a wide proof of irrational drug use (Mamun *et al*., 2004: Melnychuk *et al*., 1993). In irrational practices of medicines are seen in healthcare centers of developing countries (Ahmad and Bhutta., 1990). According to the World Bank, 20% to 50% of their national health expenditures on medicines and medical sundries are utilized by governments of developing countries (Borkan *et al*., 2010). The World Health Organization (WHO) believes that much of such expense is misapplied, as irrational utilization of drugs is common particularly in developing countries (Dutta *et al*., 2015). An inappropriate form of use of medicines have been showed in Nigerian Army reference hospitals by a multi-center study. A large number of medicines are recommended to patient, in which the amount of generic medicines given for patients is too little while the antibiotics are given in high dose. In the hospitals studied, copy of the EDL was not found. All these indicate that strict challenges exist to ensuring RDU within these facilities that have more than 50% of the army's human medical resources. To raise RDU and advance the utilization of the EDL within military medical facilities, different recommendations are made (Adebayo and Hussain., 2010). The utilization of generic analogue of medicines are promote by WHO, because these drugs are cheaper than branded ones and have the same strength (Uzochukwu *et al*., 2011). According to the WHO, a rational recommended drug must fill specific criteria such as proper indication, proper patient, suitable drug, correct information and right monitoring. Prescription drugs listed as extremely important are those which satisfy the real needs of majority of the people/population in disease identifying, prophylactic, medically helpful and rehabilitative services using criteria such as risk-benefit ratio, cost effectiveness, quality, practical administration, patient compliance and acceptance (Uzochukwu *et al*., 2011). Drug use is an involute subject involving the prescriber, the patient (client) and drug based institutions. It is influenced by factors such as drug availability, prescribers' experience, and health budget, promotional activities of the pharmaceutical industry, cultural factors, communication system and the complex interaction between these factors (Adebayo and Hussain., 2010). Drug use evaluation is a system of ongoing, systematic, criteria-based drug evaluation that ensures the proper use of medicines. The label on dispensed medicines must be provide the patient with all the information obligatory so that the medicines can be taken or utilize properly, as result therapeutic effectiveness of the drug will be improved and toxicity and adverse drug reaction will be reduced (Ghei., 1995). Globally, all medicines which are given, dispensed or sold improperly are more than 50%, while 50% of patients fail to utilize the given medicines properly. More over about one third of the world population lacks approach to vital drugs (Bodeker and Ong., 2005). The Research was Conducted descriptive study in Out Patient Department of Sassoon Hospital. Researcher's randomly collected total 1200 prescriptions and analyzed by using WHO 'prescribing indicators'. A total of 4341 drugs were prescribed. 3.62% was the average number of medicines per encounter and antibiotic prescribed was 46.17% and 100% was the drugs given by generic name and 2(0.17%) was the total number of prescriptions with an injection. Vitamins and Minerals (24.44%) was the most general group of prescribed drug, followed by Analgesics (17.76%), Antimicrobials (16.59%) and Antiulcer drugs (16.49%). Ranitidine (15.89%) was the most general drug prescribed, followed by Vitamin B complex (11.03%) and Diclofenac (10.69%). Ciprofloxacin (3.80%) was the most widespread antibiotic prescribed, followed by Amoxicillin (3.73%) and Metronidazole (2.30%). The prescribing practices in this study are not satisfactory (Afriyie and Tetteh., 2014). In Pakistan, research studies have been organized in different locations about health care system, which proved a marked fluctuation in drug

use practices. Study on these medical facilities in this region is inadequate due to low literacy rate, its long distance from developed cities, incomplete facilities and socio-economic problems. The research has been organized to determine a solid prove on extent of drug utilization practice in Health facilities of district Bhakkar and to carry on the endeavor for drug use research in Pakistan.

Research methodology

Selection of Health Centers

A prospective cross-sectional descriptive study was organized in 15 health centers of District Bhakkar starting from the month of June 2017 to August. Only four physicians were working in these respective hospitals. The names of the physicians are Dr. Azeem, Dr. SanaullahNiazi, Dr. Abdullah and Dr. Abdul Qayyum. Then we selected 10 prescriptions per Physicians.

Collection of Data through Questionnaire

According to WHO standard drug use indicators, this study was conducted. The drug use indicators include prescribing, patient care and facility particular indicators as core indicators) and using recommended plan of work of WHO (Wang *et al*., 1993). Questionnaire was made to collect data from selected health care centers and was altered as per our need by using International Network for Rational Use of Drug (INRUD) encounter form (Dahal *et al*., 2012). The alteration in the encounter form was made and thus encounter form includes patient name (indicator), age, gender, prescriber, time, diagnosis, prescription character (drug name, potency and prescribed amount; dispense quantity); patient drug knowledge (when, how much, duration); label (patient name, drug name, when).

Calculate the Data with Recommended WHO Guidelines

In this study patient for DOTS, immunization, pregnancy management, malaria, prophylaxis therapy and chronically ill was not included. To assess the prescribing pattern, ten encounters per physician were noted indiscriminately. The collected data was filled up in prescription indicator form, patient care indicator form and according to WHO guidelines, calculation of parameters was made (Wang *et al*., 1997). Calculated parameters in prescribing indicators are the average number of drug prescribed per prescription, percentage of total generic prescribing, percentage encounter who receive at least on antibiotics, percentage encounter who received at least on injection and percentage of prescribed drug from Essential Drug List (EDL); In patient care indicators, average consultation and dispensing time, percentage of drugs adequately dispensed, percentage of drug adequately labeled, percentage of patients correct knowledge of drugs were measured and availability of national essential drug list/formulary and percentage accessibility of key medicines will be measured as facility specific parameters.

Results and discussion

Demographic Characteristics

From the selected Health Care facilities, a total of 40 prescriptions were collected and were studied for different parameters which includes prescribing indicators. The numbers of females, males were 27 and 13 out of total number of visited patients. 35.79 (SD 22.23) and 30.40 (SD 22.65) was the average age of female patients, male patients visiting PHC. 33.11 (SD 22.62) was the average age of all the patients. All the HC facilities studied showed that 3.65 (SD 1.673) was the average number of drugs prescribed per encounter. Out of the total patients, only 27% patients received at least one antibiotic in their prescription and only at least one injection in their prescription was received by 35% of patients. 25% is the total percentage of medicines given in generic was noticed. In all selected health facilities, the total percentage on adequate labeling was nil in all the health facilities studied which is show in (Table 1).

Table 1. The numbers of females, males were 27 and 13 out of total number of visited patients. The average age of female patients, male patients visiting PHC was noticed to be 35.79 (SD 22.23) and 30.40 (SD 22.65). The average age of all the patients was noticed to be 33.11(SD 22.62).

Gender	Total Number	Mean Age	Std. Dev
Male	13	30.40	22.65
Female	27	35.79	22.37

Average number of medicines prescribed per patient encounter

To assess the degree of polypharmacy, the average number of medicines given per encounter was measured i.e. by dividing the total number of different medicine products prescribed by the number of encounters surveyed. Combinations of medicines given for one health problem were counted as one. We checked 40 prescriptions minimum number of medicines given was 1 and maximum number was 9 and mean was 3.65 and standard deviation was 1.673 which is show is (Table 2).

Table 2. The number of prescriptions, mean and its standard deviation.

Number of drugs	Minimum	Maximum	Mean	Std Deviation
146	1	9	3.65	1.673

Percentage of drugs given by generic name

To assess the tendency of prescribing by generic name, the percentage of medicines given by generic name was measured i.e. by dividing the number of medicines given by generic name by total number of medicines given, multiplied by 100 and our result was calculated as 25%.

We analyzed 40 prescriptions minimum number of medicines given by generic name was 0 and maximum number was 2 and mean was 0.28 and standard deviation was 1.506 which is show in (Table 3).

Table 3. Percentage of drugs, generic name its minimum, maximum, mean and standard deviation.

No. of drugs by generic name	Minimum	Maximum	Mean	Std Deviation
11	0	2	0.28	1.506

Percentage of encounters with antibiotic prescribed

To check the overall utilization of ordinarily overused and costly kinds of drug therapy, the percentage of encounters in which an antibiotic given was measured i.e. by dividing the number of patient encounters in which an antibiotic was given by the total number of encounters surveyed, multiplied by 100 and our result was calculated as 27.5%. We analyzed 40 prescriptions minimum number of antibiotics prescribed was 0 and maximum number was 2 and mean was 0.55 and standard deviation was 1.552 which is show (Table 4).

Table 4. Percentage of antibiotic its prescription, minimum, maximum, mean and standard deviation.

Number of antibiotics prescribe	Minimum	Maximum	Mean	Std Deviation
20	0	2	0.55	1.552

Percentage of encounters with injection prescribed

To check the overall level use of ordinarily overused and costly kinds of drug therapy, the percentage of encounters with an injection given was measured i.e. by dividing the number of patient encounters in which an injection was given by the total number of encounters surveyed, multiplied by 100 and our result was calculated as 35.48%. We analyzed 40 prescriptions minimum number of injections prescribed was 0 and maximum number was 4 and mean was 1.28 and standard deviation was 1.086 which is show (Table 5).

Table 5. Percentage of injection its prescription, minimum, maximum, mean and standard deviation.

Number of injections prescribed	Minimum	Maximum	Mean	Std. Deviation
51	0	4	1.28	1.086

Table 6. The average number of drugs prescription, antibiotic prescription, injection prescription and generic prescription by percentage.

Prescribing indicators assessed	Total drugs/ encounters	Average/ percent	Standard derived or ideal
Average number of drugs per encounter	146	27.39%	(1.6-1.8) [14]
Encounter with antibiotics Percentage	20	27.5%	(20.0-26.8%) [14]
Encounters with injection Percentage	51	35.48%	(13.4%-24.1%) [14]
Drugs prescribed by generic Percentage	11	25%	(100%) [14]

Discussion

The average number of drugs per prescription, 27.39%, at health care centers of Bhakkar district is

more as compared with the standard (1.6-1.8) derived as ideal which is show (Table 6) (Desalegn., 2013). In the study of medicine utilization patterns in 12 developing countries, the average number of medicines per encounter was high in Nigeria (3.8), low in Sudan (1.4), and in Zimbabwe (1.3) (Desalegn., 2013; Bimo., 1993). A high average number of medicines might be due to financial inducements to prescribers to prescribe more, shortage of therapeutic teaching of prescribers, or lack of therapeutically approved drugs. The low values might mean there is constraint in the drugs availability, or prescribers have proper training in therapeutics. 25% is the total percentage of medicines given in generic was noticed at health care centers of Bhakkar District, which is less than the standard derived to serve as ideal (100%) which is show (Table 6) (Desalegn., 2013). A related study was conducted at Jinah Hospital and south west Ethiopia, which showed 75.2% is the total percentage of drugs prescribed in generic which is low compared to the standard and to our finding (Hogerzeil *et al*., 1993).

In the study of 12 developing countries, 58% is the percentage of generic medicines given in Nigeria, which was low and also similar in Sudan (63%) but was encouraging in Tanzania (82%) and Zimbabwe (94%) (Ofori-Adjei., 1993; Bimo., 1993). The percentage of encounters in which antibiotics were prescribed at health care centers of Bhakkar District was 27.5%, which is almost equal as compared to the standard (20.0% -26.8%) derived to be ideal which is show (Table 6) (Desalegn., 2013). This result indicates that prescribed antibiotic is accurate. In the 12 developing countries, the drug utilization pattern study showed that 63% is the percentage of encounters in which an antibiotic was given, which was high in Sudan, similarly 56% in Uganda, 48% in Nigeria and comparatively better in Zimbabwe i.e. 29% (Chandelkar and Rataboli., 2017; Bimo., 1993) 35.48% is the percentage of encounters in which an injection was given at health care centers of Bhakkar District, which is higher than the standard (13.4%-24.1%) derived to serve as ideal which is show (Table 6) (Desalegn., 2013). Possible reasons for the high use of injections could be (i) beliefs and attitudes of patients and health professionals about the efficacy of injection versus oral medication or (ii) our study setting is a referral hospital where patients with serious conditions are treated, and injectable forms produce faster onset of action. In a prescription pattern study in 12 developing countries, 48% is the percentage of encounters in which an injection was given in Uganda, which was high and 36% in Sudan but very low i.e. 11% in Zimbabwe and 11% which is the satisfactory choice in Indonesia, 17% in Ecuador and 19% in Mali (Chandelkar and Rataboli., 2017: Bimo., 1993). [18,15]. As compared to other dosage forms, injections are very costly and for the administration, trained personnel are required. Moreover, the risk of spreading of potentially serious pathogens, such as hepatitis, HIV/AIDS, and blood-borne diseases etc can increase by the use of unhygienic injections.

Conclusion

Conclusion, the study reveals that trend toward irrational practice mainly on use of antibiotics and non-generic prescribing in most of health facilities studied. Patient care given by health facilities studied was inadequate and thus for encouragement of rational drug use practice, an effective intervention program is recommended. However, research study has certain limitation because the study was organized for short time period. This study was organized in eleven health post only, so the whole result cannot be looked as an outcome of the entire level of health care facilities of Bhakkar district.

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