

The Study of Evaluation of Drug Use by Using WHO'S Prescribing, Patient Care and Health Facility Indicators in Selected Health Facilities in Province Punjab, Pakistan

Muhammad Saeed Akram¹, Awais Qamar¹, Usman javid¹, Abdul Rehman¹, Farah Bano¹ and Fahad Pervaiz¹

¹Department of pharmacy, The Islamia University of Bahawalpur, Punjab, Pakistan.

ARTICLE INFO

Article history:

Received on: 12/08/2012

Revised on: 13/09/2012

Accepted on: 23/09/2012

Available online: 28/09/2012

Key words: core indicators, study in 20 health facilities, Pakistan

ABSTRACT

Rational drug use study is important for the patient care, and also act as a measure of the quality of care which is provided to patients, this study was conducted in the outdoor departments of 20 selected health facilities out of total 36 facilities of province Punjab, Pakistan by applying the core indicators of WHO. Average number of drug prescribed was 3.2 per prescription, percentage of generic drugs was 29.7%, percentage of antibiotic prescribed, injection prescribed, and percentage of drugs from NEDL were 64%, 0%, 96.5% respectively while ciprofloxacin was the most commonly used antibiotic. Average consultation time was 2.58 minutes; average dispensing time 88.5 seconds, percentage of drug actually dispensed was 82.9%, percentage of drug adequately labeled 96.9%, percentage knowledge of correct dosage 24%. Availability of NEDL or formulary was 90%. percentage of availability of key drugs in stock was 64.3%. Overall condition of rational use of medicines was not satisfactory in hospitals; this study will promote the rational use of medicines and good clinical pharmacy practice in hospitals of province Punjab, Pakistan by identifying the problems in rational use of drugs.

INTRODUCTION

Rational use of medicine means by which patients take medicine according to their clinical needs, in doses according to peoples requirements, for suitable period of time, at the lowest cost to patients and to the community (WHO, the Rational Use of Drugs). Half of total medicines in the world are prescribed, dispensed or sold not in appropriate way and rest half of total medicines are not taken in exact way. Essential medicines are not in access of almost 33% of population of world. (WHO, Promoting rational use of medicines: core components, 2002). In developing countries 60 to 80 percent of people do not have access to the essential medicines and this is due to low income

and rest of peoples have access to essential medicines receive wrong medicines, inappropriate dosage or in not such quantity to fulfill their needs. Furthermore unlicensed and untrained drug sellers are involved in dispensing of medicines. (MSH, Managing Access to Medicines and Health Technologies, third edition). To maximize the rational use of medicine The WHO conducted a conference on rational use of drugs in 1985 in Nairobi and give a method for measurements of drug use in health facilities that describes drug use patterns and prescribing behavior and this method include indicators used to make basic comparisons between situations in different areas or at different times and also used as supervisory tools to find problems in health facilities and also maximize efficient use of medicines and correcting the deviations from standards. (WHO, How to investigate drug use in health facilities: selected drug use indicators, 1993)

* Corresponding Author

Email: msaeed.akram@hotmail.com.

Mobile: +92321947165, Landline: +92414311426

So because of poor drug use in developing countries the WHO has devised indicators, standardized and evaluated it and also grouped these into three indicators as prescribing indicators, patient care indicators and the facility indicators. (WHO, How to investigate drug use in health facilities: selected drug use indicators, 1993).

Irrational use of medicine in health facilities of Pakistan is due to many factors like inappropriate prescribing of medicines, dispensing of medicines with poor label and without counseling to patients, poor knowledge of medicine to dispenser and absence of drug expert (pharmacist) in pharmacy, and most of patients come to outdoor department of health facility are illiterate so they do not have sound knowledge about the use of medicine, so there is need to address that worsen condition in health facilities of the province Punjab, Pakistan. The current study is therefore designed to evaluate the current practice which is carried out by physicians and the dispensers in health facilities of province Punjab of Pakistan according to WHO criteria based study by applying prescribing indicators, patient care indicators, and the facility indicators.

MATERIAL & METHOD

According to guidelines of WHO a cross sectional and retrospective study was carried out in outdoor departments of twenty health facilities out of 36 major health facilities of districts of the province Punjab from December 10, 2011 to May 10, 2012. Each health facility selected in district level was main referral public health facility for local people of that area and out of 20 hospitals eight were teaching hospitals and from each hospital 30 prescriptions were collected from outdoor department of each health facility and evaluated the prescribing indicators and then each patient of particular name is evaluated for the patient care indicators and after that evaluate the health facility indicators. According to WHO rational drug use indicators the Performa was made and data collected initially from each health facility and the results were calculated by applying formulas given by WHO.

Date written on prescription by prescriber was useful to verify that cases were evenly distributed throughout the period of study. Age was also analyzed by counting the number of cases in each age group, which allows for a check that patients were collected from every group. After that data were summarized and by using tools of Microsoft office 2010 gave the results final form in tables and shapes.

RESULTS

Date collected from the outdoor department of health facilities from province Punjab, Pakistan and from each hospital 30 cases were selected randomly from more than 100 prescriptions. In this way a total of six hundred cases were compiled and evaluated for the core indicators of WHO for rational drug use.

According to study there were three main categories for the age of patients, <5 years age patients were 65 (10.8%), 5 to 12 years 85 (14.1%), >12 years were 450 (75%). And from total 600 patients 363 (60.5%) were males and 237 (39.5%) were females. From the educational status of the patients, completely illiterate patients were 353 (58.8%), literate patients were 165 (27.5%) and student patients were 82 (13.6%) as data given in table no.1.

Table 1:

Age	Number	Percentage
<5Y	65	10.8
5 TO 12	85	14.1
> 12	450	75
Sex		
Male	363	60.5
Female	237	39.5
Education status of patient		
Illiterate	353	58.8
Literate	165	27.5
Students	82	13.6

Studies were carried out on twenty health facilities in outdoor departments of hospitals and note the prescribing indicators of WHO given in table

Table no: 2prescribing care indicators in twenty health facilities of province of Punjab.

sr.no	Name of Hospital	Average number of drugs prescribed	Percentage of generic drugs	Percentage of antibiotics	Percentage of injections	Percentage of drugs from NEDL
1	Allied Hospital Faisalabad	3.5	8 (7.6 %)	22 (63.3%)	0 (0 %)	105 (100%) [†]
2	BENZIR hospital Rawalpindi	3.4	26 (25.4 %)	24 (66.7%)	0 (0 %)	119 (97.5%)
3	BHAWAL Victoria hospital Bahawalpur	3.3	43 (43.8 %)	27 (76.6%) [†]	0 (0 %)	98 (100%) [†]
4	D.G KHAN DHQ	2.9	33 (37.0 %)	19 (63.3%)	0 (0 %)	89 (100%) [†]
5	Faisalabad DHQ	3.4	5 (4.8 %)*	20 (56.6%)*	0 (0 %)	96 (93.2%)
6	GUJRAWALA DHQ	3.3	57 (57.5 %)	25 (66.7%)	0 (0 %)	99 (100%) [†]
7	Holly hospital RWP	3.2	24 (24.7 %)	24 (63.3%)	0 (0 %)	80 (82.4%)*
8	Jaranawala THQ	3.2	15 (15.6%)	23 (66.7 %)	0 (0 %)	96 (100 %) [†]
9	Jinah hospital LHR	2.7	19 (12.1 %)	25 (73.3%)	0 (0 %)	71 (85.5%)
10	Jhang DHQ	2.6*	20 (25.3 %)	18 (56.6%)	0 (0 %)	79 (100%) [†]
11	Muzafar Garh DHQ	3.1	45 (48.3 %)	22 (63.3%)	0 (0 %)	93 (100%) [†]
12	Nishter hospital Multan	4.2 [†]	19 (15 %)	25 (73.3%)	0 (0 %)	102 (80.5%)
13	Okara DHQ	3.2	35 (36 %)	24 (60%)	0 (0 %)	97 (100%) [†]
14	Rhaim Yar Khan DHQ	3.5	70 (66.7%) [†]	19 (56.7%)	0 (0 %)	104 (100%) [†]
15	Saiwal DHQ	3.2	33(34.6 %)	21 (63.3%)	0 (0 %)	93 (100%) [†]
16	SARGODHA DHQ	3.1	35 (38.0 %)	22 (60%)	0 (0 %)	92 (100%) [†]
17	Services hospital Lahore	2.8	12(14.28 %)	22 (63.3%)	0 (0 %)	84 (100%) [†]
18	Sheikh Zaid Hospital Lahore	2.6*	4 (5.2 %)	23 (63.3%)	0 (0 %)	77 (100%) [†]
19	SHEIKPORA DHQ	2.6*	30 (37.5 %)	21 (66.7%)	0 (0 %)	80 (100%) [†]
20	Shorkot DHQ	3.1	45 (47.8 %)	19 (60 %)	0 (0 %)	94 100 % [†]

*= represent the minimum value, † = represent the highest value

This data showed that lowest Average number of drugs prescribed was 2.6 in three hospitals DHQ of Jhang, Sheikpora & Sheikh Zaid Hospital Lahore and highest rate of Average number of drugs prescribed was 4.2 at Nishter hospital Multan. Lowest percentage of generic drugs was observed at Sheikh Zaid Hospital Lahore (5.2%) and highest percentage of generic drugs was seen at DHQ of Rhaim Yar Khan (66.7%), lowest percentage of antibiotics prescribed in DHQ of Rhaim Yar Khan (56.7%) while highest percentage of antibiotics prescribed in BHAWAL Victoria hospital Bahawalpur (76.6%), and it was also observed that no injection is prescribed in any outdoor department of hospital, and lowest Percentage of drugs from National Essential Drug List was observed at Nishter hospital Multan (82.4%) while highest Percentage of drugs from NEDL was seen at fifteen hospitals out of total twenty. According to study results average number of drugs prescribed in province Punjab was 3.2 with total 1915, percentage of generic drugs was 29.7% total 569, percentage of antibiotic prescribed in each prescription was 64%, total number of antibiotics prescribed were 452 and 384 prescription were with antibiotics out of total 600 prescriptions, percentage of injection prescribed in outdoor department was zero, percentage of drugs prescribed from NEDL was 96.5% with 1849 drugs from NEDL out of total 1915 drugs of six hundred prescriptions data given in table no.3. While most commonly used antibiotics and their percentage of use in province Punjab hospitals given in table no. 4.

Patient care indicators were evaluated in all health facilities and data showed that shortest consultation time 1.9 minutes was in DHQ Saiwal Hospital while longest consultation time was 3.4 minutes in DHQ of Faisalabad, minimum dispensing time was 72 seconds in DHQ of Gujranwala and Saiwal while longest dispensing time 120 seconds in DHQ of Faisalabad, lowest percentage of drugs actually dispensed seen at THQ of Jaranawala & Holly hospital of Rawalpindi (74.3%) while highest percentage of drugs actually dispensed (90%) in DHQ of D.G.Khan, lowest percentage of drugs adequately labeled in DHQ of Jhang & Muzafar Garh was 89.2% while there was 100% accurately labeled drugs from twelve hospitals out of twenty, there was minimum patients how correctly know about the dosage of medicines in almost all of the health facilities as given in table no. 5. Average data about the patient care indicators given in table no. 6. Health facility indicators data was given in table no.7. Data showed that two health facilities, DHQ D.G Khan & THQ of Jaranawala did not have the NEDL or formulary while rest of (90%) health facilities had NEDL or formulary during the study period. The average data about the health facility indicators given in table no. 8

While a list of key drugs was made according to WHO guidelines and check the availability of key drugs in stock of health facilities given in table no.9. Numeric written above in 1st row from 1 to 20 indicating the names of hospitals as in previous table no. 6

Table. 3: prescribing care indicators.

	Number of Drugs Prescribed	Number Of Generic Drugs	Number Of Antibiotics prescribed	Number Of Injections prescribed	Number Of Drugs From NEDL
Total	1915	569	452	0	1849
Average	3.2		Prescription of antibiotic 384		
Percentage		29.7	64	0	96.5

Table. 4: Antibiotics used in hospitals of Punjab, Pakistan.

Name of Antibiotic	Total	Percentage
ciprofloxacin tablets	199	44.0
Flygyl tablets	99	21.9
Amoxill capsules	41	9.1
Augmentin tablets	53	11.7
Cephalosporin	38	8.4
Gentamycin	13	2.9
Clarithromycin	9	2.0
	452	

Table. 5: patient care indicators results in twenty health facilities of province Punjab.

Sr. No	Name of Hospital	Average consultation time (min.)	Average dispensing time (sec.)	% of drug actually dispensed	% of drug adequately labeled	% knowledge of correct dosage
1	Allied Hospital Faisalabad	2.8	90	78.3	96.5	20
2	BENZIR hospital Rawalpindi	3.2	102	85.3	89.6	20
3	Bhawal Victoria hospital Bahawalpur	2.4	78	85.7	100 ¹	30
4	D.G KHAN DHQ	2.4	90	90	100 ¹	20
5	Faisalabad DHQ	3.4 ¹	120 ¹	80.5	100 ¹	40 ¹
6	GUJRAWALA DHQ	2.6	72*	84.8	92.8	10*
7	Holly hospital RWP	2.8	96	74.3*	100 ¹	20
8	Jaranawala THQ	2.8	96	74.3*	100 ¹	20
9	Jinah hospital LHR	3.2	96	80.3	100 ¹	40 ¹
10	Jhang DHQ	2.6	78	82.3	89.2*	30
11	Muzafar Garh DHQ	2.6	78	82.3	89.2*	30
12	Nishter hospital Multan	3.2	96	80.3	100 ¹	30
13	Okara DHQ	2	84	82.8	100 ¹	20
14	Rhaim Yar Khan DHQ	2.2	90	87.5	95.2	20
15	Saiwal DHQ	1.9*	72*	87.5 ¹	100 ¹	10*

16	Sargodha DHQ	2	90	83.3	95	10*
17	Services hospital Lahore	2.4	78	85.7	100 [!]	30
18	Sheikh Zaid Hospital Lahore	2.6	90	85.1	100 [!]	30
19	Sheikpora DHQ	2.3	84	81.4	91.3	20
20	Shorkot DHQ	2.2	90	87.5 [!]	100 [!]	30

*= represent the minimum value, != represent the highest value

Table. 6: patient care indicators.

Indicators	Avg. consultation time	Avg. dispensing time	% of drug actually dispensed	% of drug adequately labeled	% knowledge of correct dosage
	2.58	88.5	82.9	96.9	24

Table. 7: Health facility indicator results in twenty health facilities of province Punjab.

sr.no	Name of Hospital	Availability of NEDL or formulary	% of Availability of key drugs in stock
1	Allied Hospital FSD	1	66.7
2	BENZIR hospital RWP	1	73.3
3	BHAWAL Victoria hospital	1	60
4	D.G KHAN DHQ	0	53.3
5	FSD DHQ	1	73.3
6	GUJRAWALA DHQ	1	66.7
7	Holly hospital RWP	1	73.3
8	Jaranawala THQ	0	60
9	Jinah hospital LHR	1	73.3
10	Jhang DHQ	1	66.7
11	Muzafar Garh DHQ	1	53.3
12	Nishter hospital MLN	1	66.7
13	Okara DHQ	1	53.3
14	Rhaim Yar Khan DHQ	1	73.3
15	Saiwal DHQ	1	66.7
16	SARGODHA DHQ	1	66.7
17	Services hospital LHR	1	73.3
18	Sheikh Zaid Hospital LHR	1	66.7
19	SHEIKPORA DHQ	1	46.7
20	Shorkot DHQ	1	53.3

Table. 8: Health facility indicators in Punjab, Pakistan.

Indicators	Availability of NEDL or formulary	% of Availability of key drugs in stock
	90	64.3

Table. 9: Distribution of availability of key drugs in twenty health facilities of Punjab.

sr.no	Key drug in stock	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1	Amoxill Capsule	0	1	1	1	1	1	0	1	1	0	0	0	1	1	1	1	0	1	1	1
2	Artemether-lumifentrine tablt	1	1	1	1	0	0	1	0	1	1	1	1	0	1	0	1	1	1	0	0
3	Benzoic acid +salicylic acid ointment	1	1	1	0	1	1	1	1	1	1	1	1	1	0	0	1	1	1	1	1
4	Cefhalosporin drug	1	1	0	1	0	0	1	1	0	1	0	1	0	1	1	0	1	0	1	1
5	Cipofloxacin	1	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0	1	1	0	0
6	Clarithromycin	0	0	0	0	1	0	0	0	1	1	0	1	0	1	1	1	1	0	1	0
7	Diclofenac sodium tablets	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	0	1
8	Ferric acid + Folic acid tablets	1	1	0	0	0	1	0	1	1	1	0	0	0	1	0	0	1	0	0	1
9	Flygyl	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	0	1	1
10	Mebendazole	1	0	0	1	1	1	0	1	1	0	0	1	0	0	0	0	0	1	1	1
11	ORS	0	0	0	0	1	0	1	0	0	1	0	0	0	1	0	0	0	0	0	0
12	Paracetamol	1	1	1	1	0	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1
13	Quinine sulfate tablets	0	0	0	0	1	1	1	0	0	1	1	0	1	0	1	1	1	1	0	0
14	vitamin B complex tablets	0	1	1	0	1	0	1	0	0	1	0	1	0	1	1	1	0	1	0	0
15	Chlor pheniramine tablets	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	0	0

Yes = 1, No = 0

DISCUSSION

World Health Organization devised the core indicators after the applying of these indicators we got information about the age, sex, education status of patients, prescribing indicators,

patient care indicators, and health facility indicators. According to the results it showed that the average number of drugs per encounter was 3.2, that is outside the range of WHO standards that is less than or equal to 2. (WHO, Policy Perspective on Medicines,

2002). Average Percentage of generic drug prescribed was 29.7% that is not according to the WHO standard values which was 100% it shows the greater interest of doctors to brand name prescribing. (Mulugeta TA *et al* 2011). The average percentage of antibiotics prescribed was 64% while WHO international networking for rational use of drugs (INRUD) devised limit up to 30% that showed all health facilities contributing to bacterial resistance to antibiotics but study carried out in hospital of southeast Ethiopia where results were comparatively better where values were less than 30% (Mulugeta TA *et al* 2011) while study at Debretabor Hospital in Ethiopia showed antibiotics prescribing up to 69%. (Desta Z *et al* 1997) It is also observed that ciprofloxacin was most commonly used antibiotic in Punjab hospitals Pakistan.

As WHO has recommended less than 10% of injection in each prescription (WHO/INRUD indicators) the result showed that zero percent of injection prescribed to the patients of outdoor department of each health facility that must be encouraged.

The average percentage of drug prescribed from the NEDL of Pakistan 96.5% that is less than 100% mean near to ideal value this is because of hospitals of Punjab had to prescribe the drugs only from the NEDL. Average consultation time 2.58 minutes that is less than study conducted in Jordan 3.90 minutes (Otoom S *et al* 2002) and 5.75 minutes in Niger (Massele A.Y *et al* 2001). The reason for very much lower consultation time in hospitals of province Punjab, Pakistan is due to physician less attention to the patients, and because a bundle of patients had to examine for treatment.

The average dispensing time was 88.5 seconds in province Punjab as in Jordan 28.80 seconds (Otoom *et al* 2002) while in Niger average dispensing time was 3.25 minutes (205 seconds) (Massele *et al* 2001), dispensing time in Jordan is very less than recent study in province Punjab hospitals and Niger has greater value, because of latest instrument used in dispensing and well arrangements of medicines there was less dispensing time but drawback is that no patient counseling was done before dispensing in that limited time in hospitals.

The percentage of drugs actually dispensed was 82.9% in Punjab hospitals so rest of patients referred to take drugs from community pharmacy while the percentage drugs adequately labeled was 96.9% while it is high than study conducted in southeast Ethiopia that was 70.05% (Mulugeta *et al* 2011) and 60% in Iran (Cheraghali *et al* 2004).

There was minimum number of patients who correctly know dosage of medicines that was because of low literacy and no attention paid during prescribing and dispensing of medicines. In hospitals of province Punjab, 90% hospitals had NEDL during the study period that condition comparatively better than study conducted in southeast Ethiopia (Mulugeta *et al* 2011). The average availability of key drugs in stock was 64.3% it is satisfactory.

CONCLUSION

The average number of drugs per prescription, drugs prescribed by generic names, antibiotics prescribing, prescribing through NEDL, is not according to WHO recommendation, injection prescribing is according to the recommendation, consultation time, dispensing time, is less compare to other hospitals, patients were very rarely know correct dosage of drug, so it is recommended that government health facilities and government must do best to eliminate that severe condition and follow WHO protocols to ensure rational use of drugs in Pakistan.

ACKNOWLEDGEMENT

I want to appreciate all the patients who help us in collection of data, my supervisor who did his best to complete this project and my fellows for their time in participating in the study with very special appreciation for those who participate in data write up and evaluation.

REFERENCES

- Cheraghali A.M., Nikfar S., Behmanesh Y., Rahimi V., Habibipour F., Tirdad R., Asadi and Bahrami A. Evaluation of availability, accessibility and prescribing pattern of medicines in the Islamic Republic of Iran. *Eastern Mediterranean Health Journal* 2004; 10(3):406-415
- Desta Z, Abula T, Beyene L, Fantahun M, Yohannes AG, Ayalew S. Assessment of rational drug use and prescribing in primary health care facilities in North West Ethiopia. *Eastern Mediterranean health journal.* 1997;74:758-63
- Massele A.Y., Nsimba S.E., Rimoy G. Prescribing habits in church-owned primary health care facilities in Dar Es Salaam and other Tanzanian coast regions. *Eastern Mediterranean health journal.* 2001;78 (10):510-4.
- MSH, Managing Access to Medicines and Health Technologies, third edition, accessed 28 June 2012 <<http://www.msh.org/resource-center/mds-3-digital-edition.cfm>>
- Mulugeta TA., Nasir TW. and N JR. 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* 01(07), 2011, 62-66
- Otoom S, et al. Evaluation of drug use in Jordan using World Health Organization prescribing indicators. *Eastern Mediterranean health journal,* 2002, 8:000-000.
- WHO, How to investigate drug use in health facilities: selected drug use indicators, 1993, accessed June 28, 2012 <<http://apps.who.int/medicinedocs/en/d/Js2289e/1.1.html>>
- WHO, Promoting rational use of medicines: core components, WHO Policy Perspectives on Medicines, Geneva September 2002, accessed 28 June 2012 <<http://apps.who.int/medicinedocs/en/d/Jh3011e/>>
- WHO, the Rational Use of Drugs, Report of the Conference of Experts Nairobi, 25- 29 November 1985, accessed 28 June 2012 <<http://apps.who.int/medicinedocs/en/m/abstract/Js17054e/>>

How to cite this article:

Muhammad Saeed Akram, Awais Qamar, Usman javid, Abdul Rehman, Farah Bano, and Fahad Perviz. The Study of Evaluation of Drug Use by Using WHO'S Prescribing, Patient Care and Health Facility Indicators in Selected Health Facilities in Province Punjab, Pakistan. *J App Pharm Sci.* 2012; 2(9): 088-092.