

Prescription Pattern and Prescription Errors: A Retrospective Study of In-patient's Record at a Tertiary Care Hospital Peshawar, Pakistan

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Abstract – In-appropriate prescription pattern and prescription errors arises health problems globally therefore, this piece of research study was designed to find out prescription pattern and prescription errors at Institute of Radiotherapy and Nuclear Medicine (IRNUM) Peshawar. A total of 400 in-patient's prescriptions were evaluated including 64.5% (n=258) male and 35.5% (n=142) female patients. Most of the patients were children 38% (n=152) in the age group of 0-10 years. A total of 4226 drugs were prescribed and average number of drugs per prescription was 10.56 (n=4226), percentage of prescriptions with an injection (s) prescribed was 35.25% (n=1490), percentage of prescription with an antibiotic (s) prescribed was 30.28% (n=1280), percentage of drugs prescribed by generic names were 2.74% (n=116), number of drugs prescribed from the World Health Organization Essential Drug List (WHO EDL) was 5.20% (n=220) and National Essential Drug List (NEDL) was not found. A total of 1120 prescription errors were investigated including 33.03% (n=370) absence of strength of drugs, 39.46% (n=442) illegible hand writing prescription, 22.76% (n=255) have absence frequency of drugs, 4.73% (n=53) with improper abbreviations and 52.5% (n=400) drug-drug interactions were found. This study indicates that in-appropriate prescription practice is prevalent and need further study to improve rational drug usage.

Keywords – Prescription pattern, Prescription errors, Drug use indicators, Drug-drug interactions

1. Introduction

Plants Drugs are the substances that provide credibility and play significant role in the pharmacotherapy of a disease and their availability is essential for the improvement of health services [1]. The prescription of drugs for right indications for the correct period of time in the lowest cost and at appropriate doses refers to rational drug usage [2]. Many populations of the world have faced health problems due to irrational use of drugs and it should be properly manage, in such type of situations the WHO has constituted a set of guidelines for the rational use of medications in an international conference in 1985 at Nairobi (Kenya) [3]. A set of medications refers to essential drugs that fulfill the health needs of the populations, available all the time in sufficient quantity and an appropriate dosage forms [4]. To create and enhance the positive impacts of drugs on the communities of the developing countries, this idea was developed [5], [6]. A research study revealed that 50% patients of the world did not take drugs properly, and more than 50% medications are prescribed, dispensed and sold incorrectly and about one third population has limited access to essential drugs [7]. Globally major health problem is irrational prescription. It has been observed in many research studies that bad prescribing habits may cause health deterioration of patients, harm the patients, prolongation of therapy, imposes higher costs and unsafe treatment [3]. Assessment of prescription pattern applying the WHO drug use indicators is essential to improve rational use of drugs in the developing countries [6]. The WHO drug use indicators are, average number of drugs per prescription, percentage of encounter patients with an

injection (s) prescribed, percentage of encounter patient with an antibiotic (s) prescribed, percentage of drugs prescribed with generic names etc [8].

About 30% health problems are arising due to medication errors during the disease treatment process in hospitals [9]. Most of the medication errors may encounter in the therapy of a disease from selection of drug to their administration. Many researchers have been reported in their studies that patient's health are harmed due to medication errors and most of them are errors encounter during prescription writing process [10].

The mention data revealed that little attention has been given to this part of health care delivery system which can rationalizes health care setup of the community with respect to socio-economic development, therefore this piece of research study was designed to find out and assess prescription pattern and medication errors and their impacts on health of patients in IRNUM hospital Peshawar, Pakistan.

2. Materials and Methods

A retrospective research study was accomplished in IRNUM hospital Peshawar Pakistan during January to March 2016 for a period of 60 days. In this piece of research study 400 hospitalized patient's record charts were evaluated to investigate prescription pattern and medication errors.

2.1. Study design

Only retrospective study of admitted patients was conducted.

2.2. Study population

Record charts of in-patients in the hospital were the source of research data.

2.3. Inclusion criteria

Those patients were included in this study whose hospitalization time was more than 48 hours.

2.4. Exclusion criteria

- Incomplete patient record charts.
- Patient on a single drug therapy.
- Those patients who were not taking two or more drugs.
- Patients whose hospitalization period was less than 48 hours.

2.5. Data collection

The data was collected by skilled internees of Pharm.D program on a special proforma designed by the Department of Pharmacy Shaheed Benazir Bhutto University Sheringal Dir (Upper) over a period of 60 days in different wards of IRNUM hospital Peshawar. The collected data was analyzed by the internees for investigation of WHO drug use pattern

and medication errors.

2.6. Data analysis

Online Medscape drug interaction checker software and Microsoft XL sheet was used for data.

3. Results and Discussions

This piece of research study comprise of 400 patients distributed according to their age and gender containing 64.5% (n=258) male and 35.5% (n=142) female patients. Most of the patients in this study were children 38% (n=152) which was lye in the age group of 0-10 years having 108 male and 44 female. 17.5% (n=70) patients were lye in the age group of 11-20 years, 15% (n=60) was in the age group of 21-30 years which was mostly young adults, 09% (n=36) was in the age group of 31-40 years, 8.5% (n=34) was in the age group 41-50 years, 4.25% (17) was in the age group 51-60 years, 3.75% (n=15) was in the age group 61-70 years which was mostly old peoples, 2.75% (n=11) was in the age group 71-80 years and 1.25% (n=05) was lye in the age group of 81-90 years (Table 1, Figure 1).

Table 1. Distribution of patients according to age and sex

Age, n (%)	0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	Total
Male	108	45	40	20	19	14	08	03	01	258 (64.5)
Female	44	25	20	16	15	03	07	08	04	142 (35.5)
Total	152 (38)	70 (17.5)	60 (15)	36 (09)	34 (8.5)	17 (4.25)	15 (3.75)	11 (2.75)	05 (1.25)	400 (100)

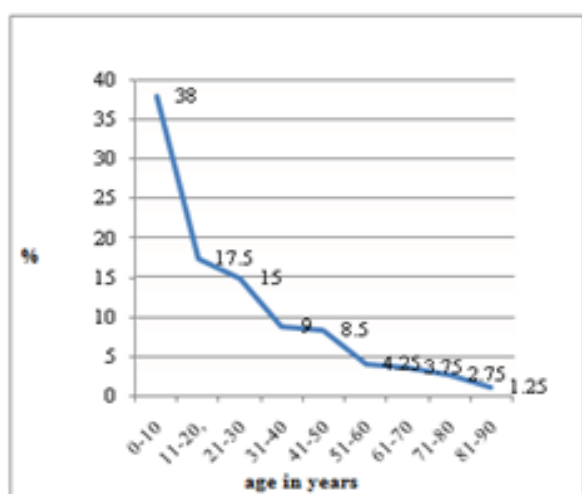


Figure 1. Age in years Vs patient's percentages

In this study the total number of drugs prescribed were 4226 (Table 2) and the WHO drug use indicators recorded were, average number of drugs per prescription was 10.56 (n=4226) and it was greater than the finding of various researchers, 3.5 in Iran [11], 4.5 in Pakistan [12], 1.3 in Zimbabwe [6] and also higher than the study reported in Teaching Hospital of Kathmandu University, Nepal [13]. The current study shows a high value of average number of drugs per prescription and according to the WHO define parameters regarding prescription pattern, average number of drugs per prescription should be in the range of 1.6-1.8. It has been revealed from the data reported by many researchers that increase in number of drugs per

prescription is directly proportional to the risk of drug-drug interaction, adverse drug reactions and contraindications [14]. This study demonstrates poly-pharmacy practices in the hospital. Percentage of prescriptions encounter with an injection (s) prescribed were 35.25% (n=1490) in this study and this value is much more than the data reported in Tanzania 19% [15] and 3.9% in India [16]. The WHO states that the number of injections should be prescribed in limited number in range of 13.4-24.1% and it has been observed that increasing the prescribing of injections in a health care setup may cause infectious diseases like HIV/AIDS, tissue necrosis, hepatitis and infection related hazards. It is also obvious from this study that in this hospital over injections prescribing practices are prevalent beyond the define limit.

Table 2. WHO drug use indicators

WHO drug use indicators	%, (n)	WHO standard values, %
Total no. of drugs prescribed to patients	(4226)	-----
Avg number of drugs per prescription	10.56	1.6-1.8
Percentage of prescription with an injection (s) prescribed	35.25 (1490)	13.4-24.1
Percentage of prescriptions with antibiotic (s) prescribed	30.28 (1280)	20-26.8
Percentage of drugs prescribed with generic names	2.74 (116)	100
Prescription of drugs prescribed from the WHO EDL	5.20 (220)	100
Drugs prescribed from the NEDL	Not found	-----

Table 3. Prescription errors

Types of errors	n	%
Absence of strength of drugs	370	33.03
Illegible hand writing	442	39.46
Frequency of drugs not mentioned	255	22.76
Improper abbreviations	53	4.73
Decision errors (n=210)		
Drug-drug interactions	210	52.5
Therapeutic duplications	0.00	0.00

Percentage of prescription with an antibiotic (s) prescribed was 30.28% (n=1280) which was almost near the defined range of the WHO antibiotic value 20-26.8%. It is reported in a study that 15-25% antibiotics prescriptions are expected due to prevalence of infectious diseases in the developing countries [17] and our reported figure almost parallel with this value. One reason for this high ratio is that, patients encounter with infectious diseases visits this hospital for treatment. This piece of research study shows the percentage of patients encounter with drugs prescribed by generic names were 2.74% (n=116) and this value is smaller than the data reported in Nepal 23% [18] which is much lower than the value defined by the WHO is 100%, according to the WHO all drugs should be prescribed with generic names. It is significant that drugs should be prescribed by their generic names to avoid confusion in filling prescriptions and to decrease cost of therapy as well. The WHO EDL is a written document consists of all the basics medications that meet the community health needs. In the current study the number of drugs prescribed from the WHO EDL was 5.20% (n=220) which was much lower than the study conducted in Nepal and also lower than the value of the WHO as 100%. Higher the prescribing of drugs from the WHO EDL greater will be rational therapy and rational prescribing practices. In this study the NEDL was not observed.

In this piece of research study we report a total of 1120 medications errors during the prescription of drugs for various ailments (Table 3). It include necessary information missing in the prescription and they are, 33.03% (n=370) absence of strength of drugs were found, 39.46% (n=442) illegible hand writing prescriptions were found, 22.76% (n=255) prescriptions were found without mentioning their frequencies and 4.73% (n=53) prescriptions were found with improper abbreviations. These types of errors are comparable with the prescription errors data reported by Sapkota et al [13] and Joshi et al [18]. It is necessary that all variables of prescription writing process should be followed strictly otherwise may lead to serious health hazards. A total of 210 decision errors including 52.5% drug-drug interactions and 0% therapeutic duplications were observed in this study (Table 3). While treating a disease by medications and ignoring drug-drug interactions goes unnoticed may cause serious health hazards [13]. It is significant to constitute a Medication Review Team including members from all departments of health care setup like physician, pharmacists that address all matters regarding drug

prescription and rational drug usage [19].

3.1. Limitations of the study

This study consists of a small number of patients and conducted only in a single hospital.

4. Conclusion

This piece of research study demonstrates that the drug use indicators are not according to the defined parameters of the WHO and inappropriate prescription practices are common in this hospital and it may lead to serious health hazards, increases cost of disease therapy and irrational drug usage. If this research study represents only a single hospital then similar research study should be conducted in the whole country to resolve this problem which will promote health of the community. There should be a clinical pharmacist at each ward in the hospital to intervene and evaluate prescriptions before administering medications to patients.

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Conflict of interest

The authors declare no conflict of interests.

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