# Assessment of Prescription Pattern and Prescription Errors using the WHO Drug Use Indicators in Lady Reading Hospital KPK, Pakistan: A retrospective study

*by* Haya Hussain

# Assessment of Prescription Pattern and Prescription Errors using the WHO Drug Use Indicators in Lady Reading Hospital KPK, Pakistan: A retrospective study

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**Abstract**

**Objective:** To assess and find out prescription pattern and prescription errors in medical ward of Leady Reading Hospital, Peshawar, Pakistan.

**Methods:** The prospective study of 200 hospitalized patient's prescriptions were evaluated to investigate the World Health Organization (WHO) drug use indicators like average number of drugs per prescription, percentage of prescriptions encounter with an injection (s) prescribed, percentage of prescriptions encounter with an antibiotic (s) prescribed, percentage of drugs prescribed with generic names, percentage of drugs prescribed from WHO Essential Drug List (EDL), drugs prescribed from National Essential Drug List (NEDL) and prescription errors.

**Results:** Average number of drugs prescribed per prescription was 7.05 (n=1410), percentage of prescriptions with an injection (s) prescribed was 49.93% (n=704), percentage of prescriptions encounter with an antibiotic (s) prescribed was 17.09% (n=241), percentage of drugs prescribed with generic names were 0%, number of drugs prescribed from WHO EDL were 49.92% (n=845), NEDL was not found. The total of 572 medication errors in prescription writing process were observed including 36.89% (n=211) errors have absent strength of drugs, 46.68% (n=267) have an illegible hand writing prescriptions, 8.39% (n=48) prescriptions have missing frequency of drugs and 8.04% (n=46) prescriptions with improper abbreviations. Similarly 49.86% (n=703) drug-drug interactions were also recorded.

**Conclusion:** This piece of research study shows that inappropriate prescribing practices are prevalent. A proper system of analyzing and assessment of prescription is recommended in order to improve rational drug use.

**Key words:** Prescription pattern, drug use indicators, prescription errors, drug-drug interactions

## INTRODUCTION

Rational use of drugs means that patient receives medications for right indications in the appropriate doses at the lowest cost and for correct period of time.[1] Irrational use of drugs is a problem in many populations of the world and needs to be manage, the WHO has developed guidelines in their international conference held in 1985 at Nairobi, Kenya.[2] Essential drugs are consists of a set of medications that fulfills the health care needs of the community; they should be available in adequate quantity at all times in the appropriate dosage forms.[3] This idea was developed to promote the health status and accelerate the positive impacts of drugs on health of the developing countries.[4,5] It is investigated worldwide that 50% patients has failed to take medicines correctly, more than half of medicines are dispensed, prescribed and sold improperly

and about one third world population has no access to essential drugs.[6] Irrational prescribing is a major health problem globally. It has been investigated that bad prescribing habits cause unsafe treatment, deterioration of illness, harm the patient and imposes higher costs due to prolongation of therapy.[2] Assessment of prescription pattern with the use of the WHO prescribing indicators is essential to promote rational use of medications in the developing countries.[5] These indicators are, average number of drugs per prescription, percentage of patient encounter with an injection prescribed, percentage of patient encounter with an antibiotic prescribed, percentages of drugs prescribed with generic names etc.[7]

Medication errors are often prevalent in hospitals and about 30% problems arising due to medication errors during hospitalization.[8] Medication errors may occurs during health care process from drug selection to medication administration. Numerous researchers have been reported that due to medications errors patients admitted to hospitals are harmed and majority of them are errors in prescription writing.[9]

Based on the above mention reported data from different researchers in the world and it is also clear that little attention has been paid to this area of health study which can play their role for the socio-economic development of community, therefore this piece of research study was designed to investigate the prescription pattern and medication errors and their consequences at a tertiary care hospital Peshawar, Pakistan.

**METHODOLOGY**

A 60 days retrospective study was conducted at medical ward of Leady Reading Hospital Peshawar, Pakistan. In this piece of research study 200 in-patient's record charts were investigated for assessment of prescription pattern and medication errors.

**Study design**

Retrospective study of hospitalized patients in the medical ward was conducted.

**Study population**

Record charts of patients admitted in medical wards were the source of research data.

**Inclusion criteria**

Those patients were included whose hospitalization period wasn't less than 48 hours and took two or more drugs.

**Exclusion criteria**

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

**Data collection**

The retrospective research data was recorded on the prescribed history form designed by the Department of Pharmacy Shaheed Benazir Bhutto University Sheringal Dir (Upper) over 60 days of research study through skilled internees of Pharm.D Program. The data was analyzed by the internees retrospectively from the medication charts of the patients for investigation of prescription pattern and medication errors.

**Data analysis**

Microsoft XL sheet and online medscape drug interaction checker software was used for data analysis.

**RESULTS**

In this piece of retrospective research study a total of 200 in-patient's records charts were evaluated for investigation of prescription pattern and medication errors containing 56.5% (n=113) male and 43.5% (n=87) were female patients. A total of 1410 drugs were prescribed

including 57.35% (n=809) to male and 42.62% (n=601) to female patients and their gender wise features are presented in Table 1. According to the data shown in the Table 2, 23% (n=46) patients were lied in the age group of 10-27 years, age group 28-45 years containing 36.5% (n=73) which was high amongst all age groups. 27% (n=54) were in the age group 46-63 years, 12.5% (n=25) in age group 64-81 years and 1% (n=2) was in group 82-99 years recorded.

In the current study the results of the WHO drug use indicators were found as average number of drugs prescribed per prescription was 7.05 (n=1410), percentage of prescriptions with an injection (s) prescribed was 49.93% (n=704), percentage of prescriptions encounter with an antibiotic (s) prescribed were 17.09% (n=241), percentage of drugs prescribed with generic names were 0%, number of drugs prescribed from the WHO EDL were 49.92% (n=845) and NEDL was not found.

In this piece of research study a total of 572 medication errors in prescription writing process were encountered consists of 36.89% (n=211) were found in prescriptions in which strength of drugs were absent, 46.68% (n=267) errors was found with an illegible hand writing prescriptions, 8.39% (n=48) prescriptions were found in which frequency of drugs were not mentioned and 8.04% (n=46) prescriptions with improper abbreviations were observed. Similarly a total of 703 decision errors were observed containing 49.86% (n=703) drug-drug interactions and 0% therapeutic duplication decision errors were found (Table 4).

## DISCUSSION

The total of 200 patient's medication history charts were evaluated retrospectively and it was found that 56.5% (n=113) prescriptions of male and 43.5% (n=87) were of female patients in the data. A total of 1410 drugs were recommended to in-patients. Most of the patients were in

the age group 28-45 years 36.5% (n=73) and they were adults. The current study shows the WHO drug use indicators as that average number of drugs per prescription was prescribed 7.05 was more than the results reported by 3.5 in Iran [10], 4.5 in Pakistan [11], 1.3 in Zimbabwe [5], however it was less than the data reported in Kathmandu University Teaching Hospital Nepal.[12] According to the WHO defined indicators, the average number of drugs per prescription should be in the range 1.6-1.8. The research data reported by many researchers has been shown that number of drugs prescribed per prescription is directly proportional to the risk of drug-drug interactions, adverse drug reactions and contraindications.[13] Current study describes that poly-pharmacy practices are prevalent in the hospital. Percentage of prescription with an injection (s) prescribed was 49.93% (n=704) which was higher in the data reported in India 3.9% [14], Tanzania 19%.[15] According to the WHO, it should be in the range of 13.4-24.1%. It is significant to reduce the use of injections in order to prevent infectious diseases like hepatitis, tissue necrosis, HIV/AIDS and injection related risks. It was also observed in the current study that over injection prescribing practices are prevalent in the hospital. In this piece of research study, percentage of encounter with an antibiotic (s) prescribed was 17.09% (n=241) which was nearly same as the ideal WHO value 20-26.8% and 15-25% antibiotics prescriptions are expected in the developing countries due to the prevalence of common infectious diseases.[16] The current study shows that percentage of drugs prescribed with generic names was 0%. The data reported about the prescription of drugs with generic names 23% in Nepal.[17] It is significant that drugs should be prescribed with their generic names to decrease cost of therapy as well as to avoid confusion in filling the prescription. Number of drugs prescribed from the WHO EDL were 49.92% (n=845) and it was higher from the finding of Joshi et al [17] which was 41.76% but lower than the WHO recommended value which is 100%. Higher the assurance of EDL greater will be the

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rational prescription as it meets all the basic requirements of the health care. NEDL was not found in this study.

The current study has observed the practices of omitting necessary information in the prescription writing process like absence of strength of drugs 36.89% (n=211), illegible hand writing 46.68% (n=267), frequency of drugs not mentioned 8.39% (n=68) and improper abbreviations 8.04% (n=46) were recorded. Such prescription writing errors were higher than reported by Joshi et al [17] and Sapkota et al.[12] It has been observed that any information regarding drugs in prescription writing process if miss may lead to serious health problems. In this piece of research study we observed 703 decision errors including 49.86% (n=703) drug-drug interactions. It has been reported in the literature that the lack of hospital pharmacist so ignoring drug-drug interactions may affect the disease therapy and causes serious health injuries.[12] It is suggested that a "Medication Review Team" [18] consists of pharmacist and physicians throughout the country should be constituted that give necessary measures and proper recommendations for rational use of medications at primary health care system.

**LIMITATIONS OF THE STUDY**

This piece of research study was conducted in a single hospital which involves a small number of patients in the medical ward.

**CONCLUSION**

The outcome of this piece of research study shows that the defined parameters of the WHO regarding prescription writing are not follows properly and inappropriate prescription practices are prevalent which lead to irrational drug usages and consequently affects the treatment process and enhances cost of therapy, ultimately causes serious health hazards in the shape of increases hospitalization period and deteriorated health of the patients. It is suggested that a Medication

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Review Team including pharmacists and physicians should be constituted throughout the country to give proper recommendations for the applications of drugs under defined parameters.

## RECOMMENDATIONS

Similar research work should be carried out for further investigations and the health department should hire clinical and hospital pharmacists to evaluate and intervene in prescriptions prior to administer medications to patients.

## FUNDING SOURCE

## CONFLICT OF INTEREST

## ACKNOWLEDGEMENT

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**Table 1**

| Table 1. gender wise distribution | | | |
|---|---|---|---|
| Gender | No. of patients | Percentages | No. of drugs n (%) |
| Male | 113 | 56.5 | 809 (57.35) |
| Female | 87 | 43.5 | 601 (42.62) |
| Total | 200 | 100 | 1410 (100) |

**Table 2**

| Table 2. age wise patient distribution | | | | | | |
|---|---|---|---|---|---|---|
| Age group in year | 10-27 year n (%) | 28-45 year n (%) | 46-63 year n (%) | 64-81 year n (%) | 82-99 year n (%) | Total |
| | 46 (23) | 73 (36.5) | 54 (27) | 25 (12.5) | 2 (1) | 200 |
| n=number | | | | | | |

**Table 3**

| WHO Core prescribing indicators | %, (n) | WHO standard values, % |
|---|---|---|
| Table 3. WHO core prescribing indicators | | |
| Total no. of drugs recommended to patients | 100 (1410) | ----- |
| Average number of drugs prescribed/encounter | 7.05 | 1.6-1.8 |
| Percentage of encounter with an injection (s) prescribed | 49.93 (704) | 13.4-24.1 |
| Percentage of encounter with antibiotic (s) prescribed | 17.09 (241) | 20-26.8 |
| Percentage of drugs prescribed with generic name | 0.00 (0.00) | 100 |
| Drugs prescribed from WHO EDL | 49.92 (845) | 100 |
| Drugs prescribed from NEDL | Not available | ----- |

**Table 4**

| Table 4. Prescription errors (n=572) | | |
|---|---|---|
| Types of errors | N | % |
| Absence of strength of drugs | 211 | 36.89 |
| Illegible hand writing | 267 | 46.68 |
| Frequency of drugs not mentioned | 48 | 8.39 |
| Improper abbreviations | 46 | 8.04 |
| **Decision errors (n=703)** | | |
| Drug-drug interactions | 703 | 49.86 |
| Therapeutic duplications | 0.00 | 0.00 |
| N=number | | |

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