

# Compliance to WHO Guidelines for Prescription Writing in a Teaching Hospital at Lahore

Naseem Saud Ahmad<sup>1</sup>, Fouzia Parveen<sup>2</sup>, Naveeda Manzoor<sup>3</sup>, Qura Tul Ain<sup>4</sup>, Sabeen Arjmand<sup>5</sup>, Maira Waqas<sup>6</sup>

## ABSTRACT

**Introduction:** Medical prescription is a legal order issued by a medical practitioner. An outcome of symptoms or disease depends upon the standard of this document. An inaccuracy in a prescription may lead to therapeutic failure, financial and social consequences. **Objectives:** To analyze the quality of prescriptions and to evaluate the extent of compliance to guidelines for prescription written in a teaching hospital. **Methodology:** The sampling technique was non-probability convenient sampling. Prescriptions advised to in-patients as well as patients reporting in Outpatient Department (OPD) of Hospital were enrolled. Rationale of prescription writing were discussed. Omissions in prescriber and patient identifiers as well as selection of medicines dose, frequency and duration of drug intake were noted. **Results:** Very few generic names were found in 305 prescriptions. Patients at the age of 31-50 years were 47% (range 1-70 years). Legibility complied 91.8%. Omission in diagnosis was 57.38%. The omissions were 23.61% in route of administration, 25.25% duration, 11.81% date of prescription and 25.57% signatures/stamps were missing. Number of drugs prescribed were 1-3 (50%), 4-6(42%) 7-9 (5%) and 10-12 (3%). **Conclusion:** This study confirms that the legibility of prescriptions is good. The magnitude of omissions is high. The shortcomings highlighted in this work can be rectified.

**Keywords:** Compliance, prescription writing, errors, omissions

## INTRODUCTION

Medical prescription is a written, electronic, or verbal order by a qualified registered medical practitioner, dentist, or veterinarian to a pharmacist for a specified medication for a particular patient with specific disease for a required time. Prescription is a derived from Latin term *preascriptus*. (*Prea* – 'before' and *scriber* – 'to write'). A prescription is not legal unless signed and dated by prescriber. Date of prescription writing helps the pharmacist to redispense and it acts as benchmark in habit forming drugs. Medical prescription is the outcome of patient and health professionals' interaction. An accurate prescription has positive effect on the health of a recipient whereas inaccuracies in drug regimens may lead to iatrogenicity, legal, financial, and social consequences. <sup>(1,2,3)</sup> Efforts have been made by World Health Organization (WHO) and other health organizations to frame legal standards for prescription writing. <sup>(1)</sup> Although 50% noncompliance to prescription writing is due to inadequate knowledge by prescriber yet these errors are not restricted to health care professionals. Pharmacist, allied health care workers and poor compliance by the patients to the prescribed drugs contribute as well. Mostly these errors are harmless or may have mild to moderate adverse effects. At times patients may have severe adverse drug reactions (ADR) leading to fatal consequences. <sup>(4)</sup>

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Correspondence:

Naseem Saud Ahmad, Professor, Department of Pharmacology, Sharif Medical & Dental College Lahore  
Ph: 0321 5106929, Email: nsaudahmad@live.com

Non-compliance to prescription writing is dealt from various perspectives depending upon the settings for health care e.g. outpatient department, hospital wards, and specialized care units. Noncompliance to prescription errors is divided into errors of omission or errors of commission. If essential information is missing from a prescription, it is called error of omission while wrongly written information in a prescription is labeled as error of commission. Most of the health workers stress upon the prescribing errors of omission rather than errors of commission. The rate of prescription error has been reported from 2.6% to 14.4%.<sup>(5,6)</sup> Errors of omission as well as commission are common in handwritten prescriptions. Prescription writing is part of pharmacology curriculum for both medical and dental students.

The objective of the study was.

1. To analyze the qualities and completeness of prescriptions written in a teaching hospital.
2. To improve prescription writing skills and counselling skills as a quality improvements step among undergraduate medical students.

## **METHODOLOGY**

This study was conducted in Sharif Medical Complex Hospital affiliated with the Sharif Medical & Dental College Lahore, from August 2018 to August 2019. The work was approved by Ethical Review Committee Ref. SMDC/SMR/72/2018, Dated 7<sup>th</sup> April 2018. Faculty from the department of Pharmacology SMDC and 3<sup>rd</sup> year MBBS students were invited to participate in this study.

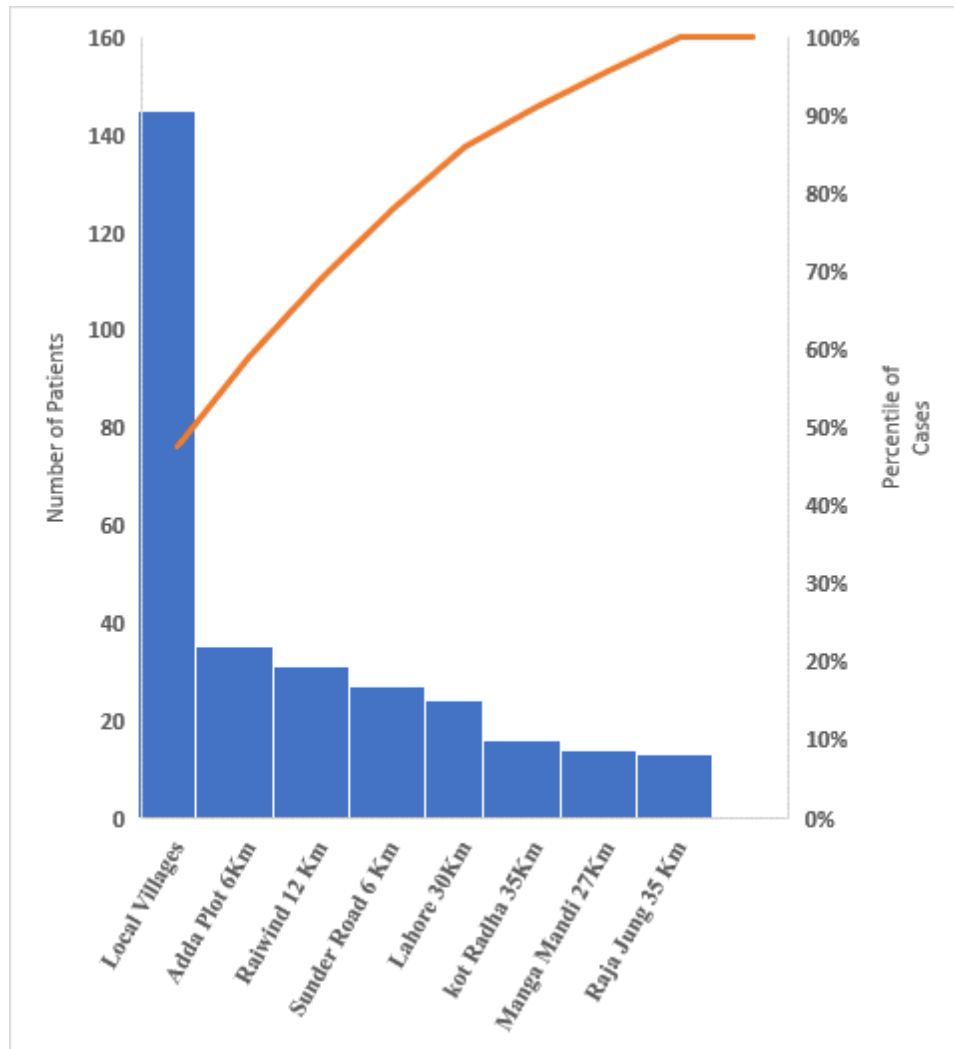
Non-probability convenience sampling was used. Sources of information were individuals coming in Pharmacy Department Sharif Medical Complex for purchase of medicines on a prescription advised to in-patients as well as patients reporting to Outpatient Department (OPD) in Sharif Medical Complex. Verbal consent was taken and inquired about the patient's satisfaction with hospital services (Data not shown) All the purchased medicines were displayed on the table and inquired from the patient/attendant about uses of drugs as per advice. A photocopy of the prescription was taken. The points related to the prescriber's identifiers (name, qualification, designation, and signatures with stamp), patient's identifiers (name, age, sex, address and disease), Identifiers related to drugs (generic name of drugs, strength, route, dose and duration) legibility of every prescription was tabulated (present -1, missing -0).

The documents obtained from hospital pharmacy were analyzed in the Pharmacology practical class. Frequency distribution of omissions was noted. Statistical Package for Social Sciences (SPSS) version 21 was used. The numerical figures were presented in simple percentage, mode, or mean values.

## **RESULTS**

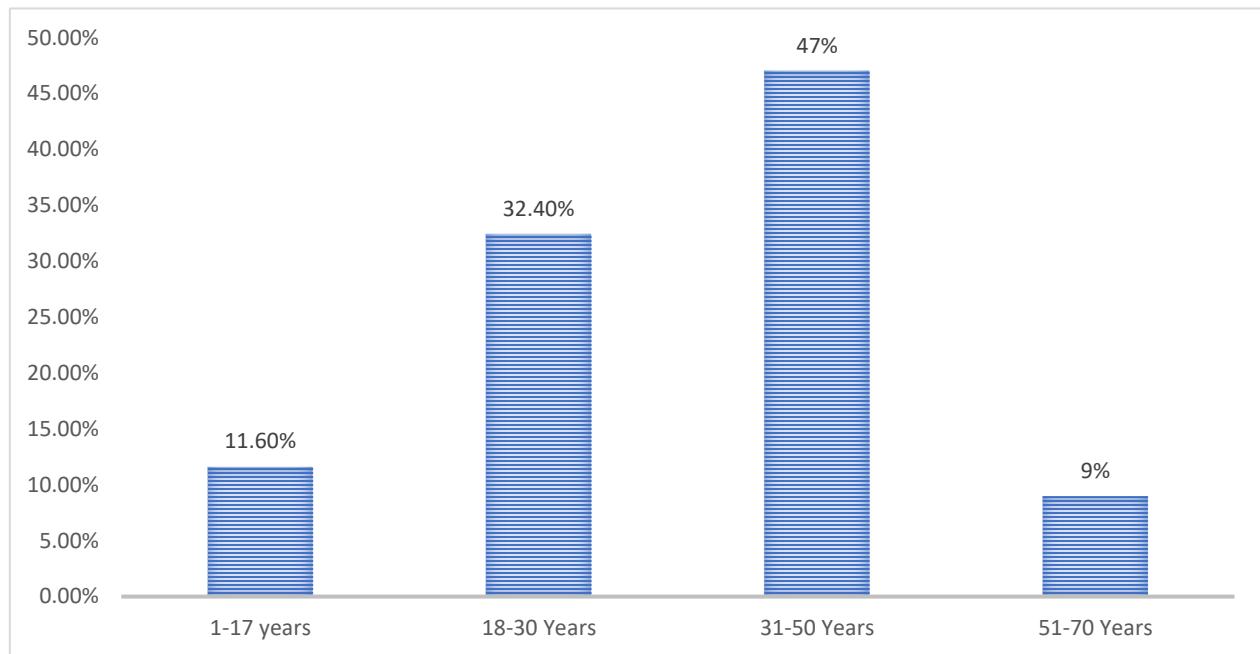
The number of prescriptions evaluated were 305. Total number of drugs prescribed were 1184. The modes of drugs prescribed per prescription were 3 and number of drugs ranged from 1-12

per prescription. Sharif Medical Complex is located in a rural area having few residents in the vicinity. Most of the people come from the connecting villages and neighboring towns. There were 47.54% patients from local regions whereas 41.15% patients reported from adjoining towns (Figure-1).

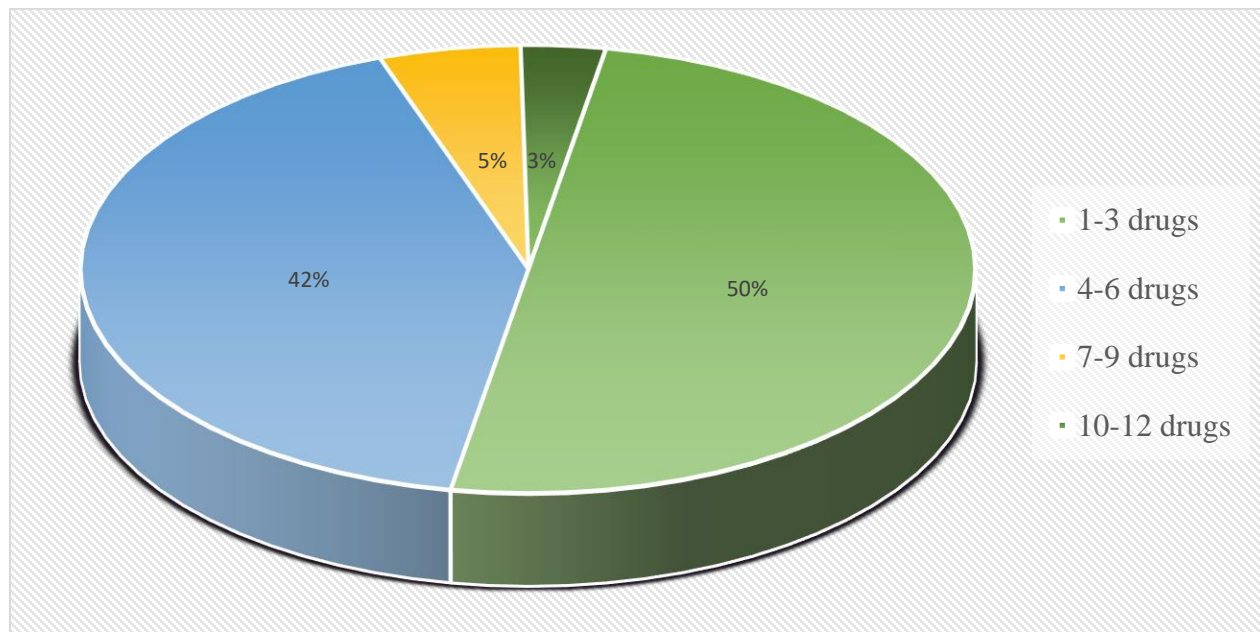


**Fig 1: Catchment area of Sharif Medical Complex (KM) and number of patients reporting for treatment. (n=305).**

It is worth mentioning that 7.9% patients reported from Lahore. Age of patients reporting to SMC ranges 1-70 years. Maximum number of patients (47%) were at the age of 31-50 years. Age groups 1-17 years and 18-30 years were 11.6% and 32.4% respectively. Although prevalence of ailment increases with age, but 9% reporting patients were from 51-70 years age group (Figure 2). Illegibility of prescription was 8.2%. Omission in diagnosis was 57.38%. Omissions in prescriber and patient identifiers are presented in Table-1.



**Fig 2: Age of patients (years) reporting to Sharif Medical Complex (n=305)**



**Fig 3: Number of drugs (%) prescribed per prescription (mode 3).**

**Table 1: Medical prescription in compliance with WHO prescription writing regulations at Sharif Medical Complex (n=305).**

Prescriber, Patient Identifiers	Errors of omissions %	Identifiers related to drug	Errors of omissions %
Prescribers (name, qualification, designation)	47.54	Diagnosis	57.38
Patient's name	4.5	Generic name	Nil ‡
Age & sex	31.2	Dosage form	5.94
Address	11.4	Dose	3.61
Date of prescription	11.81	Route	23.61 ‡‡
Signature/stamp	25.57	Frequency	3.3
Illegible	8.2	Duration	25.25

**Where:** ‡-Most of the drugs are prescribed by their trade names.

‡‡ Capsules, tablets and syrups are presumed to be used by oral route. Topical application creams, lotions and ointments is definite.

## DISCUSSION

SMC is part of Sharif Education City. It has multiple educational institutes and rehabilitation centers along with Sharif Medical and Dental College. It is situated in an isolated location having a few residents in the vicinity.

Errors of omissions are the fourth most frequent cause of adverse drug effects (ADEs). The first three omissions are wrong decisions for surgery, suicidal attempts, post-operative complications. Errors of omissions may occur during prescription writing, dispensing, and administering a drug. More than 48% of prescription errors are intercepted by pharmacist. <sup>(7)</sup> Causes of medication errors are divided into 4 categories; not following the formulary as first, unclear medication order as second, ambiguous nomenclature as third and the fourth one is illegible handwriting. <sup>(8)</sup> There is consensus; the ailments increase with age but we observed that 9% cases were above 50 years (Figure-2). Patient's compliance mandatory for clinical outcome. The factors related to poor compliance are myriad; poor communication among physicians and patient, poor education, complex drug regimens and number of drugs prescribed are serious issues in our community. Four to six drugs were prescribed for 42% patients (Figure-3). There were 6-9 drugs for 5% patients. Overall prescription practices in Sharif Medical Complex is good. There were 1-3 drugs advised to 50% of patient reporting in OPDs. There was a universal deficiency in the addresses of patients. Just hometowns were mentioned. The house number or street numbers were not written. Incomplete addresses may become a major short coming during follow up studies after

discharge from the hospital. There were 1184 drugs prescribed to 305 patients.

A medication regimen having multiple drugs and multiple doses is the major predictor of non-compliance and hospital readmissions. <sup>(9)</sup> Most of the prescriptions were on printed medical sheets of Sharif Medical Complex. Prescriber identifiers were not a problem, but signatures or stamps of prescriber were missing in 25.57% cases. In official language these prescriptions were illegal. Poor handwriting is a subjective and preventable shortcoming of prescriber. It depends upon the linguistic skills of dispenser and workplace. There were 8.2 percent illegible prescriptions. Illegibility varies from 7.1 to 54%. Legese et al has reported 54% illegibility in a setting of Jimma University. <sup>(10,11,12)</sup> A number of drugs sound alike may cause errors during transcription. For example, carbimazole, omeprazole, amlodipine, amiloride, amiodarone, ceftazidime, thyroxine, ceftriaxone, miconazole, metronidazole, priadel<sup>R</sup> (lithium carbonate) parlodel<sup>R</sup> (bromocriptine) rifadin<sup>R</sup> (rifamycin) rifinah<sup>R</sup> (rifampicin & isoniazid). <sup>(13)</sup> There was 5.94% omission in dosage forms and strength of drugs was not mentioned in 3.61% cases. Dose is not mandatory for topical applications and oral rehydration salts. Some of the drugs are available in multiple dosage forms. Omissions in posology has been reported. Dose of drugs is compulsory specially for habit forming drugs, antimicrobials, anti-arrhythmic and anticancer drugs; Augmentin (amoxicillin/clavulanate) one teaspoon full oral suspension is dispensed as 125mg/31.25mg/5ml, 200mg/28.5mg/5ml, 400mg/57mg/5ml, 600mg/42.9mg/5ml. For adults' daily dose of augmentin is 1500mg amoxicillin/375mg clavulanate. It may be given 8 hourly or 12 hourly. <sup>(14)</sup> Bromazepam is a benzodiazepine used as an anxiolytic. It is available in tablets 3mg and 6mg. Variation in dispensing may cause deep sedation or therapeutic failure due to larger or smaller doses. <sup>(15)</sup>

Some drugs are dispensed as SR (sustained release) preparations e.g. Tab. diltiazem SR is a calcium channel blocker. These SR preparations are given 12 hourly or once daily. There may be fatal consequences when SR tablets are crushed and administered by N.G tube to critically ill patient. Which may result in rapid drug uptake through the gut and high plasma levels causing cardiac arrest. <sup>(16)</sup> Misinterpretation of abbreviations in units may lead to fatal consequences. If insulin 5IU is advised in ketoacidosis and nursing staff misread it 51 unit of insulin instead of 5 international units. Similarly in epidural block 3.0mg per 10 ml infusion of an opiate (diamorphine) is read as 30mg per 10 infusion; resulting in delayed labour and neonatal apnea. It is advised to write unit in full words like 3International Units instead of 3IU as well as prescribe in whole units instead of decimals points "figures 3mg instead of decimals 3.0 mg. <sup>(17,18)</sup> Unusual or rarely used dosing regimens may be misread; Oral methotrexate is prescribed weekly for rheumatoid arthritis and psoriasis e.g. Alendronate 70 mg/7 days is misread as 70mg alendronate for 7 days. It should be written alendronate 70 mg/once a week. <sup>(19,20)</sup>

Training in clinical units is focused on diagnosis of a disease as well as investigations to support the final diagnosis. The prescribing behaviour of teachers is copied, or the existing guideline laid down in intensive care units or hospital are followed without reasoning. So therapeutic skills or prescribing skills of young doctors remain weaker. This study was planned to analyze the completeness and legibility of the prescription. The authors are of the opinion that these efforts will improve quality of healthcare system by decreasing prescription errors. The analysis was restricted to errors of omissions; errors of commission were not discussed. An achievement of this exercise was to collect and analyze this information through undergraduate medical students so that they can easily realize the patient safety and risks related to errors in prescription writing. This manuscript has limitations; the rationale of drug therapy, combination of antimicrobials and potential risks of drug combinations are not covered.

## CONCLUSION

This study confirms the legibility of prescriptions is good. The magnitude of omissions is high. The shortcomings highlighted in this work can be rectified.

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