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Original Research Article

Legibility assessment of handwritten O.P.D prescriptions of a tertiary care Medical College and Hospital in Eastern India

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Abstract: Legibility and accuracy are the key features of every handwritten prescription. Large number of medication errors and even death of patients may occur due to illegible prescriptions. The present study was undertaken to assess the handwritten O.P.D. prescriptions of a tertiary care Medical College and Hospital in India, focusing the aspects of legibility and accuracy. For this study, scanned copies of 1268 O.P.D prescriptions were taken from hospital pharmacy over a period of 6 months (Feb 2015 to July 2015) and analyzed. Results were expressed in percentages. About 98% prescriptions scored 3 and 2% prescriptions scored 4.There was no prescription with miss-spelt drug names. Formulations and drug strengths were not mentioned in 11.1% and 7% of cases respectively. Abbreviations of names of medicines were written by 11% of prescribers. Seventy nine percent of prescribers preferred to use archaic terminology. Twenty percent of the prescribers did not put the leading zero where applicable and only 4% of the prescribers used capital letter. Generation of an error-free and legible prescription requires adequate care and attention about the multiple components which affect the legibility and accuracy of prescriptions. E-prescribing and computerized documentation may eliminate errors in prescribing.
Keywords: Prescription, handwritten, legibility, out-patient department

INTRODUCTION

The prescription may be defined as the "prescriber's order to prepare or dispense a specific treatment - usually medication -for a specific patient"[1]. Prescription may also be described as a mechanism through which a treatment modality is provided to a patient, also it may be described as the "most important therapeutic transaction between physician and patient"[2, 3]. A prescriber must follow the inherent legal and ethical duty imposed on him to write the prescription legibly, clearly and accurately [4]. In government hospitals and health facilities in India, medicines are dispensed to patients by prescriptions which are usually hand-written. Illegible writing in these prescriptions cause misinterpretation of name of a medicine, formulation, dose strength of medicines, which may give rise to medication errors in the form of severe adverse drug reactions and even death of a patient [3]. There are reports where daonil (an antidiabetic drug) was dispensed instead of amoxil (an antibiotic), plendil was dispensed instead of isordil. Misinterpretation in the first case caused severe hypoglycemia and death of the patient in the second case [5]. Another report revealed that that a nurse misinterpreted physician's order for a cardiac medication and injected the dose instead of administering the elixir formulation of the drug, which caused death of the patient [6].There are conflicting results and conclusions about hand-writing of doctors and other professionals. In one study, it was found that hand-writing of doctors was no less legible than other professionals [7]. Another study concluded that physician's hand-writing when compared to other health-care professionals and administrators was the worst of all [8]. Mediocre quality handwriting in prescriptions is unacceptable as it may cause harm or injury to patients. It was given so importance that Institute for Safe medication practices aimed to eliminate handwritten prescriptions by 2003 in USA [9]. But in our country no such initiative has been undertaken. So in regions and countries where handwritten prescriptions are the usual source of medicine dispensing mechanism, the handwritten document must be legible and accurate. The good

practices which must be followed in generating an accurate and error-free prescriptions are: correct spelling of name of medicines, clear mentioning of formulation, strength and dose of medicine, avoiding/eliminating medicine name abbreviations and archaic terminologies (such as O.D., B.D., H.S. etc.), using leading zero instead of trailing zero when using decimal expressions, writing the medicine name in capital letter [1, 3, 9].

A few studies in Worldwide and in India particularly, have investigated on aspects of legibility and accuracy of handwritten prescriptions. Keeping this background in view, the present study was undertaken to assess the legibility and accuracy of out-patient department (OPD) generated prescriptions of a tertiary care Medical College and Hospital in India.

MATERIALS AND METHODS

Study Setting and Duration

This unicentric, cross-sectional, observational study was carried out by Department of Pharmacology, Medical college, Kolkata over a period of 6 months (February 2015 and July 2015) after obtaining due approval of Institutional Ethics Committee. Most of the patients with their prescriptions issued from different out-patient departments usually come to the hospital pharmacy for collecting medicines. For this, scanned copy of prescriptions was obtained from the hospital pharmacy. Informed consent was taken from the patients' in their vernacular before obtaining the scanned copy of the prescriptions.

A study specific data record form was prepared to collect the data. One post graduate trainee who was not involved in prescribing medicines in out-patient departments was allocated to collect and evaluate the data. He was explained adequately about the data collection procedure and analysis. Prescriptions obtained thereof was assessed using the following parameters:

Legibility (a four point scoring method as used by others) [7, 10] as mentioned below:

- Illegible (most or all words impossible to identify)
- Most words illegible; meaning of the whole unclear
- Some words illegible, but report can be understood by a clinician
- Legible (all words clear)

Name/formulations/strength/dose of drugs (correct/mentioned, incorrect/not mentioned)

Archaic terminology/leading zero/capital letter (used/ not used).

Statistical Analysis

Collected data was evaluated using Microsoft Word Excel 2007. The data was analyzed for determining descriptive statistics such as frequency and percentage.

RESULTS

Results were expressed in percentages. A total of 1268 prescriptions were assessed. About 98% prescriptions scored 3 and 2% prescriptions scored 4 [Table 1].There was no prescription with miss-spelt drug names. Formulations and drug strengths were not mentioned in 11.1% and 7% of cases respectively. Abbreviations of names of medicines were written by 11% of prescribers [Table 2]. Seventy nine percent of prescribers preferred to use archaic terminology during prescription writing. Twenty percent of the prescribers did not put the leading zero where applicable and only 4% of the prescribers used capital letter while writing the prescriptions [Table3].

Table-1: Assessment of legibility of prescriptions (by four point scoring method

Score	No. of prescriptions
1.Most/ all words impossible to identify	0
2.Most words illegible; meaning of whole unclear	0
3.Some words illegible, but report can be understood by a clinician	1240(97.8%)
4.All words clear	28(2.2%)

Table-2: Assessment of spelling of name of medicines/formulations/strength and dose of drugs/abbreviations of names of medicines identified in prescriptions

Parameters assessed	Correct/mentioned/used	Incorrect/not mentioned/not used
Spelling of name of medicines	Correct in 1268	Incorrect 0
Formulations	Mentioned in1128 (88.9%)	Not mentioned in 140(11.1%)
Strength and dose of drugs	Mentioned in 1180(93%)	Not mentioned in 88(7%)
Abbreviations of names of medicines	Used in 139(11%)	Not used in 1129(89%)

Table-3: Assessment of use of archaic terminology/ leading zero/ capital letter in prescriptions

Parameters assessed	Used	Not used
Archaic terminologies	Used in 1001(79%)	Not used in 267(21%)
Leading zero	Used in 1015(80%)	Not used in 253(20%)
Capital letter	Used in 50(4%)	Not used in 1118(96%)

DISCUSSION

Illegible prescriptions result in inefficient and faulty communication which leads to medication errors, patient harm and legal issues [11]. Keeping this serious background in mind, in the present study, out-patient department (OPD) prescriptions of a tertiary care teaching hospital were evaluated for legibility and accuracy. Results were compared with other studies where hand-written OPD prescriptions as well as medication orders or case notes of admitted indoor patients were also evaluated. In this study, in 97.8% of prescriptions, some words were illegible, but report could be understood by a clinician; no prescription scored 1 or 2. In studies, where out-patient progress notes (n=50) and OPD prescriptions (n=120) were assessed, respectively 6% and 6.6% prescriptions were found to be illegible and scored 1or 2 [12, 13]. In other studies where both inpatient orders (n=3740) and OPD prescriptions (n=1425) or only inpatient orders (n=176) or only case notes (n=116) were evaluated, it was found that respectively 10% of inpatient orders, 15% of OPD prescriptions in the first study, 20% of inpatient orders in the second study and 15% of case notes in the third study were illegible and scored 1 or 2 [10, 14, 15]. In this study, spelling of names of medicines were correct in all prescriptions, which was comparable to two other studies where all spellings were correct in one study, but 98.1% in another [13, 16]. In this study, strength and dose of medicines, formulations were not mentioned in respectively 11.1% and 7% cases. Other studies have revealed that formulations and strength of drugs were not mentioned in respectively 4.2% and 5% cases and prescribers used wrong medicine name and dosage form in 11.4% cases [13, 17]. In one study, where indoor prescriptions were evaluated, dosage form and formulations were not mentioned in 1.9% cases [16]. There are other important factors which affect the accuracy of prescriptions and causes misinterpretation of prescriptions. Some of them are: use of abbreviations of name of medicines, use of archaic terminologies and omission of leading zero. Also, use of capital letter reduces confusion, improves legibility and eliminates misinterpretation of prescriptions. In this study, abbreviations of names of medicines and archaic terminology was used in respectively 11% and 79% cases, capital letter was used in only 4% cases and leading zero was used in 20% cases. In two different studies where OPD and indoor prescriptions were evaluated, it was found that archaic terminology was used in respectively 60% and 85% cases, capital letter was used in respectively 6.6% and 10.2% cases whereas leading zero was used in only 15.4% and 19% cases respectively [13,16].

CONCLUSION

The present study reveals that even in a tertiary care teaching hospital, a significant number of OPD prescriptions lacking the essential features of a prescription - legibility. Illegible handwriting in handwritten prescriptions significantly lowers standard of care and endangers patient. Computer generated prescriptions may eliminate the ambiguity and illegibility of handwritten prescriptions. On the other hand, quality of handwritten prescriptions may be improved by taking utmost care while writing a prescription and following some principles like: using capital letters and leading zero, avoiding the use of archaic terminologies and writing the name, formulations, strength and dose of medicines accurately.

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