

## **ANALYSIS OF MEDICAL PRESCRIPTION:PRESCRIBER'S ADHERENCE TO THE BASIC PRINCIPLES OF PRESCRIPTION ORDER WRITING**

### **ABSTRACT**

Medical prescription is a medico-legal document. All prescription order should be legible, unambiguous, dated and signed clearly for optimal communication between prescriber and dispenser. The information written on the 324 prescription encounters were collected on the basis of presence or absence of basic contents of prescriptions, under five broad sections- 1. About doctor (prescriber's identity), 2. About patient (patient's identity), 3. About disease, 4. About treatment, 5. About validity of prescription and analysed to assess prescriber's adherence to the basic principles of prescription order writing and to increase awareness among prescribers in this regard. Analysis revealed, 64.81% prescriptions had legible handwriting, date of issue of prescription was present in 94.44% of prescriptions, doctor's medical council registration number was not present in 85.19% prescriptions, patient's address were missing in 82.72% prescriptions, 46.91% prescription did not have any information regarding patient's complaints or disease, average drugs per prescription was 3.33, directions to dispenser were present in 55.56% prescriptions, directions to patient were present in 88.88% prescriptions and signature of doctor was present in 67.28% prescription. It necessitates that sensitization programmes should be initiated and training should be provided to improve prescriber's adherence to basic principles of prescription writing.

**Key words:** Adherence, Information, Polypharmacy, Prescription, Prescription format.

### **INTRODUCTION**

Medical prescription is an important document of medico-legal values so due attention should be given for following the principles and considering the completeness of procedures of prescription order writing.<sup>1,2</sup> It can be defined as a written instruction from a prescriber to a dispenser and a patient regarding a patient's ailment and its remedy/remedies at a particular situation and time with an intention for palliation or restoration of patient's health.<sup>3,4</sup>

All prescription order should be legible, unambiguous, dated and signed clearly for optimal communication between prescriber and dispenser (pharmacist). A good prescription should contain sufficient information to permit the pharmacist to discover possible errors before the drug is dispensed or administered. Different forms of error may occur. The common ones are omission of needed information, poor writing perhaps leading to errors of drug dose or timing; and prescription of drugs that are inappropriate for the specific situation.<sup>5</sup> Illegible prescriptions can lead to harmful effects and sometimes can be fatal too.<sup>6</sup> Analysis of prescription data could provide the basis for reviewing prescription practices and developing measures to promote the rational use of drugs and prevent drug-related problems.<sup>7</sup> The aim of this study was to assess prescriber's adherence to the basic principles of prescription order writing and to increase awareness among prescriber in this regard.

### **MATERIALS AND METHODS**

The present retrospective study was conducted in Mahabubnagar, Andhra Pradesh with due permission from principal, SVS Medical College and Hospital, Mahabubnagar between January 2012 to May 2012. 324 prescription encounters prescribed by registered (graduate and post graduate) practitioners having practice in different hospitals and clinics, were collected from patients' file and got xeroxed after proper explanation of the purpose of work. No attempt has been made to categorize the prescriptions according to patient's age, sex or disease profile.

All the data exclusively based on the information written on the prescriptions were collected on the basis of presence or absence of basic

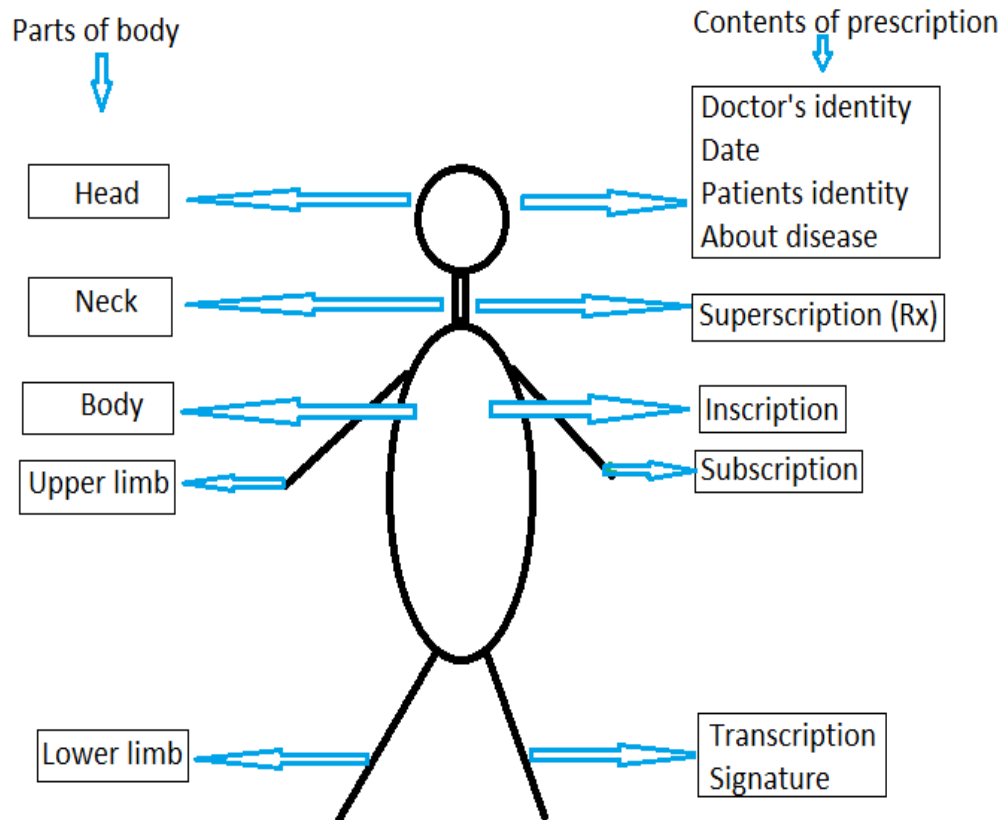
contents of prescriptions, under five broad sections- 1. About doctor (prescriber's identity), 2. About patient (patient's identity), 3. About disease, 4. About treatment, 5. About validity of prescription as in table-1 and figure-1. Characteristics of inscription, subscription, transcription under the section 'About treatment' were evaluated as present for all drugs or present for some drugs or not present (absent). Present for all drug means characteristic was present for all drug, present for some drugs means characteristic was present for at least one drug, not present (absent) means characteristic was not present for any drug

Prescriptions written by ayurvedic practitioners and dental surgeons and prescriptions for items other than medicine were excluded from the study. If at least one of the components of a prescription could not be read by the data evaluators, that prescription was categorized as 'illegible'.

All the collected data were arranged, analysed, expressed in percentage and presented in tabular form.

Sl.No.	Section	Explanation
1.	About doctors (prescriber's identity) and date of prescription	Doctor's name, address, contact no. medical council registration no. and date on which prescription was issued- present or not present.
2.	About patient (patient's identity)	Patient's name, age, sex, address- present or not present.
3.	About disease	Chief complaints for which medical advice was sought or signs & symptoms or diagnosis- present or not present.
4.	About treatment	<b>Superscription:</b> denoted by $R_x$ or any other mode of writing it- present or not present. <b>Inscription:</b> analysis of number, name, strength, dosage form, dose, frequency, duration of treatment and route of administration of drug used- presents for all drugs or some drugs or not present. <b>Subscription:</b> directions to dispenser (pharmacist) regarding dosage and total amount of drug to be dispensed- present for all drugs or present for some drugs or absent. <b>Transcription (signatura):</b> instructions to patient regarding use of drugs including route of administration of drug- present for all drugs or present for some drugs or not present.
5.	About validity of prescription	Signature of prescriber- present or not present.

**Table-1:** Sections in which information available from studied prescription were collected on present or not present (absent) basis and their explanation.



**Figure-1:** Schematic representation of prescription and its comparison with human body.

[Explanation-Doctor observes, analyzes and decides the treatment plan for patient's problems at particular situation and time with the help of his head and brain, so doctor's identity, date of issue of prescription order, patient's identity and about disease are represented by *head* of human shaped prescription sketch.

Inscription is the body of prescription as it contain all necessary requirements about medication so it is represented by *body*.

Superscription  $R_x$  derived from Latin word *Recipe* meaning take thou (you take) probably derived from ancient Roman symbol for Jupiter and used in physician's prayer for survival of patient, connect doctor's analysis and decision about patient's problem to inscription like neck connect the head to the body so superscription is represented by *neck*.

Subscription(direction to dispenser) is important for proper functioning of treatment plan and medication like hand is required for properly doing a job so subscription is represented by *upper limb*.

Transcription (signatura) ie direction to patient is important to achieve the treatment target (destination) like legs are required to reach the destination so Transcription is represented by *lower limb*.]

## RESULTS&DISCUSSION

Illegible handwriting in prescriptions not only place patients at risk but also wastes time and money in deciphering the intended meaning from clues on prescription or attempting to locate an unknown physician whose signature is illegible to get clarification of the prescription order.<sup>8</sup> In the present study, more than one-third of prescriptions (35.19%) were illegible which is more than reported by Sadikalmahdi H Abdellaet *al.*<sup>9</sup>(18.80%). Illegible prescriptions can lead to harmful effects and sometimes can be fatal too.<sup>6</sup>

Doctor's identity including contact number facilitates communication with other health-care professionals if questions arise.<sup>8</sup>In the present study name & address of prescriber and contact number of prescriber did not appear in 21.60% and 22.22% prescriptions respectively (table-2). In a study conducted by Patel V *etal.* (2005)<sup>10</sup> also prescriber's name, address and contact number were missing in 29.80%, 27.37% and 37.98% prescriptions respectively. Such type of deficiencies can pose a major difficulty for dispensing pharmacist to contact the prescriber in case of any clarification. Apart from this it becomes an illegal document if it does not bear the name of the doctor. Appearance of medical registration number in a prescription, a legal requirement was present only in 14.81% of all prescriptions which is more than the report of P Sharma *et al.*<sup>11</sup>(2%) but less than the report of Patel V *etal.* (24.14%).<sup>10</sup>The date is an important piece of information of the patient's medical record. It can assist the pharmacist in recognizing potential problems and estimating patient's compliance behaviour towards treatment using the dates when a prescription is filled and refilled.<sup>8</sup>

In most of the prescriptions (94.44%) in the present study date of issue of prescription was present. This finding is similar to the report of P Sharma *et al.* (94%)<sup>11</sup>, more than the report of Patel V *etal.* (84.55%)<sup>10</sup>but less than the report of D Tikooet *al.* (100%)<sup>12</sup>. The mention of date of issue of prescription while writing a prescription is essential as Medical prescription is a medico-legal document.<sup>2</sup>

In the section 'About patient' (patient's identity) in the present study patient's name was present in 96.30% of prescriptions (table-3) which is less than the report of P Sharma *et al.* (100%)<sup>11</sup>and patient's address was present in 17.28% prescriptions which is more than report of same author (5%).<sup>11</sup> The patient's name and address are needed on the prescription order to ensure that the correct medication goes to the correct patient and for record keeping purposes.<sup>8</sup> Patient's age was deficient in 43.83% of prescriptions which was less than the deficiency reported by P Sharma *et al.* (73%).<sup>11</sup>

In the section 'About disease' in the present study 46.91% prescription did not have any information regarding disease. Neither chief complaints for which medical advice was sought, nor signs & symptoms nor diagnosis were present. This finding shows much deviation from the finding of A. Hazraet *al.* (7.7%).<sup>13</sup> The diagnosis is an essential component in a prescription.<sup>14</sup> Prescriptions that fails to mention either signs and symptoms or diagnosis could create problems during follow up.<sup>13</sup>

In the section 'About treatment' in the present study the esoteric symbol R<sub>x</sub> meaning 'take thou' or a prayer to the God of healing, Zeus or Jupiter was mentioned in more number of prescriptions (69.75%) but alternative symbol for superscription (Adv/Advice) was mentioned in less number of prescriptions (4.32 %) as compared to study report of P Sharma *et al.*<sup>11</sup> in which symbol R<sub>x</sub> and Adv were found in 63% and 10% of prescriptions respectively. 25.93% prescriptions had neither symbol R<sub>x</sub> nor any other alternative symbol for superscription which is similar to the report of P Sharma *et al.*<sup>11</sup>(27%). Regarding inscription, there was an increase followed by decrease tendency in the frequency of polypharmacy (simultaneous use of multiple drugs) was found.(Table-4) Treatment with 2 or 3 drugs may not result in medication problems but when the number of drugs exceeds 4, there is a significant risk of adverse drug reactions, medication errors and increased risk of hospitalisation.<sup>15,16,17</sup> Average number of drugs per prescription encounter was found 3.33 which is similar to the report of A. Hazraet *al.* (3.2)<sup>13</sup> and D. Tikooet *al.*<sup>9</sup> (3.26), more than the report of S. Karandeet *al.*<sup>18</sup> (2.9) but less than the report of Rishi *et al.* (3.6).<sup>19</sup> Average number of drugs per encounter is an important index of scope for educational intervention in prescribing practices.<sup>20</sup>

The incompleteness of drug related information (dosage form, strength of preparation, dose & frequency and duration of treatment) has been observed in the present study. From this study name of drug/s were written on all prescriptions but dosage form, strength of preparation, dose & frequency and duration of treatment were missing in 9.88%, 24.07%, 3.70%, and 25.31% of prescriptions respectively (table-5). Comparing with the study done by Sadikalmahdi H Abdella *et al.*<sup>9</sup> in which dosage form, strength of preparation, dose, frequency and duration of treatment were missing in 72.40%, 37.76%, 61.20%, 23.70%, 37.76% of prescriptions respectively. The finding of this study shows better adherence towards writing drug related information.

Inscription (direction to dispenser/pharmacist) contents were present for all drugs in more than half of the prescriptions (55.56%) but not complete and clear. Partial direction can cause the medication errors.

Subscription (direction to patient) contents were present for all drugs in most of the prescriptions (88.88%) of prescriptions but not complete and clear. Route of drug administration was mentioned only in few prescriptions (7.41%) which shows poor adherence in this regard as compared to the report of Sadikalmahdi H Abdella *et al.*<sup>9</sup> (67.4%). Mentioning a complete and clear direction for the use of drugs not only help the patient but also help the dispenser (pharmacist) in counselling patients properly. Medication counselling in many situations is a legal and professional responsibility of pharmacist.<sup>8</sup> Instructions regarding refill of prescription were not present in any prescription orders.

In the section 'About validity of prescription', signature of doctor was present in 67.28% of prescriptions which shows poor adherence in this regard as compared to the report of Sadikalmahdi H Abdella *et al.*<sup>9</sup> (76.30%). Considering prescription, a medico-legal document it should be signed in ink by prescriber.<sup>2,8</sup> Signature of doctor indicate the end of prescribing procedure so space between drug-related components and Signature should not be left to avoid misuse of the prescription.

Limitation of the study is that present study is focused on contents of prescription rather than rationality of prescription and number of prescription included is less so inclusion of more prescriptions may strengthen the present outcomes, so further study is needed in this topic.

## CONCLUSION

The present study mandates that there should be a standard ideal format for all prescriptions. Sensitization programmes should be initiated and training should be provided to improve prescriber's adherence to basic principles of prescription writing. More emphasis needs to be laid on teaching the art of writing a prescription to undergraduate and postgraduate students.

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Sl.No.	Characteristic	Present (%)	Not Present (%)
1	Doctor's name	254 (78.40%)	70 (21.60%)
2	Address	254 (78.40%)	70 (21.60%)
3	Contact number	252 (77.78%)	72 (22.22%)
4	Registration number	48 (14.81%)	276 (85.19%)

Table-2: Analysis of studied prescriptions with regard to doctor's identity (About doctor) (n=324)

Sl.No.	Characteristic	Present (%)	Not Present (%)
1	Patient's name	312 (96.30%)	12 (3.70%)
2	Age	182 (56.17%)	142 (43.83%)
3	Sex	152 (46.91%)	172 (53.09%)
4	Address	56 (17.28%)	268 (82.72%)

Table-3: Analysis of studied prescriptions with regard to patient's identity-'About patient'.(n=324)

Drug per encounter	Number of prescription	Percentage of prescription
1	46	14.20%
2	48	14.81%
3	98	30.25%
4	60	18.52%
5	46	14.20%
6	14	4.32%
7	8	2.47%
8	4	1.23%

Table-4: Distribution of studied prescriptions according to the number of drugs prescribed per encounter. (n=324)

\*Average number of drugs per prescription encounter = 3.33

Characteristic	Present for all drug (%)	Present for some drug (%)	Not Present (%)
Dosage form	274 (84.57%)	18 (5.55%)	32 (9.88%)
Strength of preparation	174 (53.70%)	72 (22.23%)	78 (24.07%)
Dose and frequency	298 (91.98%)	14 (4.32%)	12 (3.70%)
Duration of treatment	232 (71.60%)	10 (3.09%)	82 (25.31%)
Direction to dispenser	180 (55.56%)	70 (21.60%)	74 (22.84%)
Direction to patient	288 (88.88%)	18 (5.56%)	18 (5.56%)

Table-5: Analysis of studied prescriptions with regard to treatment with medicine- 'About treatment'. (n=324)

**\*Dr. Raj Kishore Mahato<sup>1</sup>, Dr. Parineeta Suman<sup>2</sup>**

<sup>1</sup>M.B.B.S , MD Pharmacology, Associate Professor ,Department of Pharmacology, Velammal Medical College Hospital & Research Institute, Madurai, Tamilnadu- 625009

<sup>2</sup>M.B.B.S , MD Anatomy, Assistant Professor ,Department of Anatomy, Velammal Medical College Hospital & Research Institute, Madurai, Tamilnadu- 625009