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COMPARISON OF PRESCRIPTION PROCEDURES BETWEEN DEVELOPED COUNTRIES AND INDIA- SUGGESTIONS ON HOW TO MINIMIZE THE PRESCRIPTION ERRORS IN INDIA.

SUBMITTED

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DR. IRWIN G. MARTIN PhD

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SANDEEP KUMAR THUDI

(E00953302)

INTRODUCTION

The word prescription is originated from the Latin term Praescriptus, “prae” means before and “scriber” means to write. Thus, the word prescription means “to write before” [1]. A prescription (R_X) is a written order by a physician or a medical practitioner to a pharmacist in the form of medication instructions for individual patients. It can also be defined an order to take certain medications [1].

Prescription plays a vital role because, it is a means of communication between the prescriber and the pharmacist. The prescriber writes the required medications of the patient in the prescription and then the pharmacist dispenses the drugs to the patient. The errors may occur during dispensing of drugs due to few reasons, which might cause problems to the patient. Thus, handling of prescription should be done in a standard way to avoid errors.

Parts of the prescription [13]

Mainly the prescription has 7 parts

- Date
- Name of the patient and information as to age
- Superscription
- Inscription
- Subscription
- Signatura
- Prescriber’s name

Date:

It helps pharmacist to find the date of prescribing and date of presentation for filling the prescription. The prescription which prescribes narcotic or other habit forming drugs must have the date, which helps in misusing the prescription if it is presented by the patient for multiple dispensing.

Name of the patient and information as to age:

All these details of the patient must be written in the prescription as it helps to identify the patient. In case, if any of this information is missing in the prescription, the same may be included by the pharmacist after proper enquiry from the patient. Age and Sex of the patient, in case of children, help the pharmacist to check prescribed dose of medication.

Superscription:

The superscription part consists of the sign R_X in which the letter R is derived from Latin word recipe meaning take off.

Inscription or Body of prescription:

This part of prescription contains the names and quantities of the main ingredients of the prescription. It also contains the dose and dosage form of the prescribed drugs.

Subscription:

This part of the prescription contains directions for the pharmacist to compound the medications. These are directions are written in the Latin terms.

Signatura:

This part mainly contains instructions to the patient and how to administer the drug, route of administration and dose of the medications.

Prescriber's name:

The prescription should contain the prescribers name, address and registration number. This information is mainly useful in case of narcotic drugs and other habit forming drugs.

Medication errors

According to national coordinating council for medication error reporting and prevention(NCCMERP), medication error is " any preventable event that may cause lead to inappropriate medication use or patient harm while the medication is in the control of the health care professional ,patient or consumer, such events may be related to professional practice, health care products, procedures and systems, including prescribing, order communication, product labeling, packaging, and nomenclature, compounding, dispensing, distribution, administration education, monitoring and use." [10]

The prescription errors may occur due to the following reasons:

- Inadequate knowledge of the patient and their clinical status
- Inadequate drug knowledge
- Calculation errors
- Illegible hand writing
- Drug name confusion
- Poor history taking

A brief summary of prescription procedures and community pharmacy procedures in developed countries United States and European countries are provided. The pharmacy structure and prescription errors in India discussed in detail. An observational study was conducted in a community pharmacy in India and prescription procedure followed in India is outlined. Details of different elements of a prescription and their impacts are outlined.

BACKGROUND

In a study conducted in Palestine on the prescription quality and prescribing trends of private clinics in Nablus governorate, a total of 363 prescriptions were collected from a random sample of 36 community pharmacies over a study period of 288 working hours [21]. Data regarding elements in the prescription and the types of drugs prescribed were analyzed. Different elements of a prescription were observed. Here, the patient's address and weight were absent in all prescriptions, but age and sex were present. The information related to the strength of medications prescribed was missing in over 70% of prescriptions. Other drug related variables like frequency and instruction of use were present in over 80% of prescriptions.

Dispensing errors were studied by Szeinbach-et-al[22]. (2007) in community pharmacies. In this study, a random sample of 1047 community pharmacies was taken into consideration. The impact of attitudinal items with respect to pharmacy practice setting like mass merchant, supermarket, chain and independent and socio-technical factors were assessed.

It was found that the pharmacists (45%) observed that the design of pharmacy has been one of the main factors that contribute to dispensing errors, communication errors, efficiency problems etc. In this study, it was analyzed that automated dispensing systems were perceived as less likely ($P < 0.05$) to contribute to dispensing errors, communication errors, problems with

efficiency and extra physical movement. It was observed that the rate of dispensing errors was 0.057%, and the numbers of dispensing errors ($P < 0.001$) was significantly compared with the prescription errors. Approximately 80% of dispensing errors were related to cognitive errors.

In a study carried out by Pandey.et.al, prescriptions were analyzed at pediatric outpatient practice in Nagpur, India. The study sample included "1376 valid pediatric outpatient department (OPD) prescriptions in four randomly selected community pharmacies in Nagpur, collected over a period of 2 months".[12] The core error indicators used in this study were outlined by World Health Organization (WHO), which were used to define the errors. The 1376 prescriptions included in the study were for a total of 3435 drugs prescribed by 41 doctors. It was analyzed that fixed dose formulations dominated the prescribing pattern. Prescribing was done by market name in most of the countries, and generic prescriptions were for merely 254 (7.4%) drugs and the prescribing pattern also indicated poly pharmacy in which 1087 (79%) of prescriptions were antibiotics and 22 (1.6%) were inject able drugs.

METHODOLOGY

For this particular project, a brief summary of prescription procedures in developed countries like USA and Europe as well as India (developing) were given. The content of the paper will be as follows.

- **Summary of prescription procedures in US, Europe and India**
- **Observational study of prescription errors in India**

The writer had worked in Hyderabad, the capital city of Andhra Pradesh, India. This place has nearly a thousand pharmacies and most percentage of people come to this city for different kinds of treatment. This gave me an opportunity to work on a large number of different prescriptions that were from different providers. The pharmacy used to receive prescriptions from hospitals with excellent infrastructure as well as small local clinics.

During the writer's work here, different varieties of prescriptions were observed in the pharmacy. Here, the writer started recording the prescription errors that were observed while dispensing the drugs. Measures were taken not to use the patient personal information or any medical information from the prescription. The procedure that the writer followed to collect data for the observational study in detail was:

- During the process of dispensing, any errors in the prescription were noted and they were given a serial number accordingly.
- The next step was to identify who prescribed the prescription and qualification of the prescriber.
- The writer would then check if the prescription was on the doctor's letter head with the required information like the date, address and contact information.
- If there were any errors on the prescription, and the prescription had the prescriber's contact information, the writer used to speak with the prescriber to make sure that that it was an error and not intentionally written.
- If the prescription did not have the contact information of the prescriber, the patient or customer was requested to refer back to the prescriber.
- All of the above were general procedures that we followed while working in the pharmacy.

- Apart from the general procedures, the writer recorded other additional information regarding different required elements in the prescription.

The elements that I noted from the prescription were checked in my checklist and they were:

- Language in which the prescription was written
- Letter head of the prescription
- Check any contact information of the prescriber
- Check any error on the prescription
- Look for patient information like weight, age and gender mentioned
- Check the dosage of the drugs mentioned
- Check if the handwriting on the prescription understandable
- Whether the prescription contained signature of the prescriber

The following were the elements that I looked for during the observational study:

- No patient's or customer's names were used in the study.
- No patient was forced to give more information or personal details regarding their prescription or their disease.
- Special category patients like physically disabled or mentally disabled were not involved in this study.
- None of medicines or formulae in the prescription were noted or used during the study.
- None of the patient's name, medical information, billing information or any other personal information was collected for the study. In fact, they were not a part of the study and hence not required and not collected anywhere during the study.

RESULTS

Summary of prescription procedures in US:

US prescription procedure [23]

In US, prescriptions are mainly prescribed by the physicians, nurse practitioners and sometimes by the clinical pharmacists. There is a format for prescribing the medication with all the general information related to the patient like age, sex, address, etc. The prescription includes both patients and prescriber's information like the name of the drug, dosage and also prescriber related information. According to Texas pharmacy association, the prescription filling procedure is a critical step that has to be followed, by the pharmacist to avoid dispensing medication errors. There are five steps in the prescription filling process:

- Prescription drop-off
- Patient profile review
- Order entry
- Order fulfillment and final check
- Pick up

Prescription drop-off:

Initially when the prescription is received, the pharmacist has to make sure that the prescription is accurate. The pharmacist checks the prescription to contain the patient full name, medication name and dosage, directions of taking, physician's signature, and refill information. The pharmacists contact the physician if there are any errors in the above information.

Patient profile review:

The pharmacist can collect the following information (like date of birth, address of the patient, prescription insurance of the patient if any, drug allergies and concomitant medications) to review the personal and medical background of the patient. This information is collected to review the safety and compatibility with the other medications.

Order entry:

Once the pharmacist get all the required information, then the data is entered into the system. If any of the information is not clear then the pharmacist should contact the physician, later the information is sent to the patient's insurance company to know the percentage of prescription covered by the insurance.

Order fulfillment and final check:

After verifying all the information of the patient, medication are filled in an appropriate container and labeled according to state and federal regulations. The prescription containing the customized medications are compounded by the pharmacist and then dispensed to the patient. Later the pharmacist reviews all the information is accurate before dispensing to the patient. The pharmacist should be careful while dispensing the medications such that the correct medications are given to the correct patients.

Prescription pick-up:

During pick-up of the medications, the patient needs to ask the pharmacist if there are any concerns about the medications. The pharmacist should counsel the patient if the administration of the medication needs any special precautions.

National Coordinating Council for Medication Error Reporting and Prevention (NCCMERP) [10]

In USA, the error reporting system followed is the National Coordinating Council for Medication Error Reporting and Prevention (NCCMERP). This system has an index which categorizes the errors from no harm to death. The primary objective of NCCMERP is to minimize the errors and improve the error reporting systems through means of communication and other strategies. It also emphasizes on the improving standards of prescription writing, procurement dispensing and administration. Educating the concerned healthcare professionals is the prime motive of NCCMERP.

The NCCMERP has council recommendations for enhancing prescription writing. Basically, these recommendations are for professionals who are involved in writing the prescriptions like doctors, pharmacy staff or the nurses who are involved in verbal prescriptions or admission orders. The council recommendations for safe prescription writing are as below:

- The medications on a prescription should be legible and measures should be taken to minimize verbal prescription orders.
- Notification of purpose of medication. A brief notification of purpose for the medication is recommended, this helps to double check the medication by personnel who dispense the drugs. Thus reducing the chances of prescription errors.
- Proper and compulsory usage of metrics for dosages. Metrics should be used to mention or specify the dosages on the prescription, so that there isn't any misunderstanding of the dosages.

- Pharmacists should cross check with the prescriber if the metrics are not clear and the strengths of the dosages are not mentioned in the prescription.
- The patient details should be mentioned in detail like the age, weight and disease. This is necessary for pediatric prescriptions as there is a lot of variation in the strength and dosages.
- Means to minimize the dosage errors with decimals. There have been a lot of errors reported due to the misunderstanding of the decimals in dosages present on a prescription. A “zero” is recommended before a decimal which gives the right value.
- The council also recommends the usage of full names of the drugs and avoids abbreviations (short names) of drugs on prescription. These abbreviations were found to be dangerous and therefore were suggested not to be used.
- Specific directions for the usage of the medications need to be mentioned on the prescription for the patients to have a clear understanding of the directions of use.

The Institute of Medicine (IOM) [4] has conducted a study which suggests that prescription software or electronic medical writing could help in safe medications and reduce the prescription errors that might occur when hand written. By using the computer program to write prescriptions, software would pop up warnings which would raise a flag to the prescriber about the drug interaction or the incorrect drug spelling etc. This kind of software also helps in maintaining the records of the patient and therefore would be helpful in suggesting the right medication.

EUROPE [8]

Prescriptions in the United Kingdom are mainly prescribed by independent prescribers and supplementary prescribers. The independent prescribers are mainly the physicians in hospitals or the highly qualified nurses, and pharmacists. Supplementary prescribers are those who will take care of the patients after the general physician suggestions. They mainly include the nurses, pharmacists and the lab technicians[11]. The prescriptions are mainly 2 types they are (a) National Health Service (NHS) which contain the NHS logo on them (b) Private prescriptions which are given by the general physician. Most of the NHS prescriptions are free to patients who come under this prescription category. The patient has to pay for the private prescriptions. When the prescription first arrives into the pharmacy, the pharmacist checks whether it is from NHS or a private prescriber. The patient related information is entered into the system and the data provided is cross checked and then they will dispense the medication according to the prescription and patients are directed how to use the medication.

Stages of prescribing medicines in Europe[15]

In Europe, the methods below are followed for prescribing the drugs to a patient.

Prescribing:

This is done by the doctor usually or an authorized healthcare professional. The drugs are prescribed based on the clinical examinations and the history of the patient's disease.

Transcription:

The prescription is modified either handwritten or computerized. The other medical therapies are included at this stage in detail.

Reviewing and verifying the drug order:

A qualified healthcare professional or relevant clinical pharmacist make an intervention here by reviewing the drug order for the patient and verifying if the order is ready for dispensing.

Preparing:

Here the formulation and compounding of the drug order takes place which are then followed by packaging and later labeling.

Dispensing:

This involves the preparation of doses that need to be administered. The concerned healthcare professional is supposed to give necessary advices for the safe use of medications.

Drug administration:

This stage can be two types. It can either be self administration or administered by nurses or equally qualified professionals. It also involves the administrations of right dosages, recording of the dosages and preliminary precautions before dosages.

Patient Monitoring:

This step includes the follow up of the patient and regular update on the records of the patients. It also involves checking for any adverse events during the medication period.

These are the general prescription procedures followed in European countries. This is a systematic approach which gives a broad scope for patient safety and greater opportunity to minimize the medication errors during this procedure. Even then, there are many chances for errors that can take place during this procedure.

There is a possibility of the medication errors at every stage like prescription errors, transcription errors, preparation errors, dispensing errors, administration errors and monitoring errors. Out of these, most common errors that have been reported very commonly are prescription errors and dispensing errors. The MERS in Europe have been making stringent efforts to encourage the healthcare professionals and patients to bring it to the notice of the local or national level reporting systems of concerned errors. In a study conducted my European MERS to know the common reasons for medication errors[8], they found out the below reasons

- Confusion in the patient name
- Confusion in the name of the lookalike medicines
- Written or verbal miscommunication of the medicines
- Problems with labeling or packaging problem

Medical Error Reporting Systems (MERS) [8]

MERS is a reporting system, which works to improve medication safety by reporting the prescription errors, adverse events. The primary objective of MERS is to create awareness of prescription and medication errors to healthcare practitioners and to patients for better understanding of the prescription error solutions. The idea of MERS can be made prudent only when the reports are evaluated and a feedback analysis is given to the concerned professionals and others who could learn from the errors.

In Europe, the medication errors might occur due to different practices like prescription writing, adverse events etc are reported through MERS both at local and national level.

Local level error reporting system

- The local levels of the system contain a multidisciplinary committee which includes different administrators, physicians, pharmacists and nurses.
- The staff is well trained in various different administrative and clinical procedures for reacting to a variety of errors.
- Usually the local reporting systems are inter-linked such that the reported errors are shared among them and the staff is trained such that the error does not occur again at that facility.
- The physicians, healthcare professionals and providers are usually trained and encouraged to share their medication errors that they come across to provide a safe environment for patients.
- Finally, all the local level errors are reported to the national level, where they are focused more seriously at the national level.

National level error reporting system [10]

The national level has an advantage of gathering all the error reports at both local and national level. The data collected at the local level aggregates to provide larger datasets, which makes the issue more clear and apparent.

An example of MERS at national level is National Patient Safety Agency (NPSA) and National Reporting and Learning System (NRLS) which are MERS at national level. The reporting systems here are voluntary. They are two sided. It can either be reported by the

clinical staff who realize the error or from the patient side who have been victims of prescription errors or other kind of errors.

Community Pharmacy Procedures in Europe [18]

Community pharmacies are the one which are serving to major parts of the Europe. There are about 154,000 community pharmacies all over Europe, according to a survey in Europe there are approximately 98% of people can reach their community pharmacy with in half-hour and 58% of the people said that their closest pharmacy was about few miles from the place where they lived.

Modern community pharmacy mainly depends on 4 principles[19]

- Increasing the safety of medication and providing an easy access to the medicines
- Enhancing the outcome of treatment for individuals
- Improving public health
- Improvement in the efficiency of the system.

Medicines are the only things which are used as an aid in the health system to get into the original state from diseased condition. This can be achieved by following the correct medication to the correct person at the correct time and this can be only achieved by the pharmacist, who guides us in the right direction to take the medication. The pharmacist roles are to store the medications in appropriate places, like some of the medication should be stored in cold places and also to make sure that certain mandated medications are always in stock. The quality of the medications are also very important. The pharmacist has to make sure with the supply chain that all the drugs which they got have passed all the regulatory requirements. The core job of a pharmacist is to compound the drugs, for example all medications are not in exact dosages, and

they must be prepared according to the prescription. Community pharmacies are the places which are open 24/7 and 365 days for the emergency services and also while dispensing the medication it is the pharmacist who is responsible to explain the side effects, route of administration and other information related to the drug.

Community pharmacists are contributing to the improvement of efficiency in the health care system because people more often visit the pharmacist than that of the physician because pharmacists don't need an appointment to talk with and they will stay longer hours than that of the physician do, so they are more in contact with the patients to guide them in the right way, and also helpful in cost management for patients in referring to the generic drugs than the branded drugs which costs them less.

Prescription procedures in India

In India, prescriptions are mainly given by the doctors, the doctors may include Bachelor of Medicine/Bachelor of Surgery (MBBS), Bachelor of Medicine/Bachelor of Surgery with Post Graduation (MBBS with PG), dentist, ophthalmologist, Registered Medical Practitioner (RMP) are the main people who prescribe the medications in India. Sometimes the pharmacists and the head nurses will also prescribe if they are minor ailments. Mainly the prescription in India consists of a letter-head with the hospital name in which the doctor is working and the name of the doctor followed by his qualification, date of the prescription written. The middle part of the prescription contains all the medication and its dosage form are written along with the frequency of medication followed by the doctor's signature. Most of the prescriptions in India are hand written on a paper. These hand written prescriptions usually are of different font, style etc. Sometimes it would be difficult for a pharmacist to understand the prescriber's handwritten

prescriptions, though most were understandable [17]. In India, the patients or the customer bring in the prescription to pharmacy. First the pharmacist will study the prescription and inquires if the prescription is for him. This is asked because most of the prescriptions in India do not contain information related to the patients. It only consists of the medications written for the patient. Most of the people do not have medical insurance in India and they are paid for immediately.

Draw backs of Indian Pharmacy Practice/Prescription Writing [16]

In India a qualified pharmacist needs to have either a diploma in pharmacy or bachelors in pharmacy

- In India, the diplomas of qualified pharmacists are usually brought by the business people to set up a pharmacy. The original pharmacist is paid an early amount for their diplomas, but the actual diploma holder is not physically present at the pharmacy.
- Registered Medical Practitioner (RMP) doctors mostly work in the rural areas, for practice they should have a qualification in homeopathic, unani, or allopathic medicine to apply for RMP registration, but most of the people don't have registration. Most of them are the people who work in hospitals for a couple of years as assistants to the doctors before moving to the rural places and start prescribing the medications. Most of the people live in the villages are uneducated, these RMP doctors will prescribe the drugs which are readily available and this is one of the major causes for medication errors.
- There are some common incidents where medicines are written on a piece of paper or sometimes just verbally told as there are a large population who are uneducated it is very difficult for them to even pronounce the names of the medicines.

- If the prescriptions are not clear pharmacists will take their own decision without reverting back to the doctor. This leads to serious prescription errors.
- Very few pharmacies in India maintain the required storage conditions to maintain the medical values of the drugs. Drugs which need to be stored under low temperatures are not stored in a refrigerator which leads to impact the medicinal values of the drug.
- The pharmacists do not maintain any previous records of the patients which may be helpful in knowing the adverse drug reactions or multiple drug interactions.
- Indian paper prescription usually do not contain the name or information of the patient so while a prescription is taken to a pharmacist for dispensing , the pharmacist hardly enquire whom the patient is or any other personal details such as age, gender etc. It is even critical if the patient is a child, the parents usually pick up the medicines for children. But due to lack of information of prescription, medicines are dispensed keeping in mind as parents as the patients which leads to medication error.
- The other major error that pharmacists involve is that, if exact dose of medication is not available then pharmacist suggests the patient to administer half of the portion of the drug.

INDIA

In India prescriptions are mainly given by the doctors and head nurses with the hospital letter head and most of the prescriptions are hand written with the highest chances of the prescription

errors, when these are taken into the pharmacy the pharmacists will look at the drugs which are prescribed and takes the information from the patient to whom it was prescribed and dispensed accordingly.

Author have specifically detailed in the above methodology section on how the required data is collected for this particular project, a total of 479 prescriptions were studied during a study period of 1 month. A total 1966 medications were prescribed in 479 prescriptions, containing 1403 prescription errors, with an average of 3 errors per prescription. There were many observations related to demography, general format of the prescription like letter head, address, contact information of the prescriber, date, signature etc, dosages, handwriting and medical errors was taken into consideration.

The demographic details of study population are given in Table.1.

Table.1Demographic details of study population

SEX	***Number***	***Percentage***
Male	*298*	*62.3*
Female	*181*	*37.7*
Age group	**Total**	**Percentage**
<15	28	5.84
16-25	101	21.08
26-40	151	31.5
41-60	121	25.2

>60	78	16.2

The above table shows the percentage of male and female prescriptions that were among 479 prescriptions that the author used for the study. The table also gives the percentage of different age group prescriptions that were involved in the study.

Table.2 Signature of Prescriber

The table below gives the percentage of prescriptions with and without the prescriber's signature. So, it was hard to believe that a qualified professional had written this prescription. As prescriptions in India are written on paper signature on it was a genuine requirement. The details of which were shown

S. No	**Description**	**Number**	**Percentage**
1	Prescription with Prescribers signature	311	64.9%
2	Prescription without Prescribers signature	168	35.07%

Table.3 Dose of the Drug

The table below shows the percentage with and without proper dosage. As the prescribers in India work at the multiple places which is a common practise, as they treat as many numbers of patients in the visiting hours.

S. No	Description	Number	Percentage
1	Prescriptions with proper dose	411	85.1
2	Prescriptions without proper dose	68	14.9

Table.4 Basic Information Present on Prescription

Majority of the prescriptions contained only few entities like the date of the prescription, address, speciality, name of the patient. Information related to the prescriber like address of the prescriber was present in all the prescriptions. All the prescriptions have the name and frequency of the dosage but none of the prescriptions got the weight and address of the patient. None of the prescriptions contained all the required parameters for clear understanding of prescription for both the patient and pharmacist. Only, few parameters like frequency of the medication are present all prescriptions.

INFORMATION PRESENT	NUMBER	PERCENTAGE
Physician Related		
Address	479	100%
Specialization	310	86.3%
Licence Number	268	55.9%

Patient Related		
Name	479	100%
Weight	0	0%
Address	0	0%
Frequency	479	100%

Table.5 Language used to instruct the patient

The table below represents the percentage of prescriptions that were written in English and Telugu which is a native language, and most of them do not understand if the instructions are in English. Therefore it is better for prescribers to know whether the pharmacists understand English before they write the instructions.

S. No	**Language Used**	**Number**	**Percentage**
1	Telugu	42	8.7
2	English	437	91.3

Figure.1 Legibility of hand writing

The legibility of prescribers hand writing was also assessed in this study. The legibility of prescribers hand writing was categorized into three different categories like hand writing is clear, partially understood, and not clear. OF all the 479 prescriptions 62% of the prescriptions are clear and 5% of the prescriptions are partially understood and the 5% of them are not clear. This may cause major prescription errors if the prescriptions are not clear.

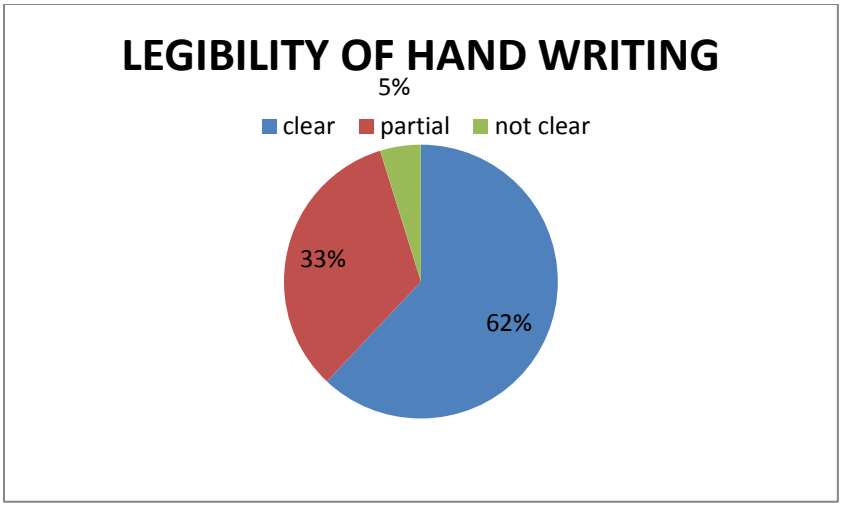


Figure 2 Prescription errors in accordance with prescriber's qualification.

Number of errors done in a prescription was assessed in accordance with qualification of Prescriber, it was found that number of errors were more with the prescriber with higher degree. Doctors with MBBS (Bachelor Of Medicine/ Bachelor Of Surgery) degree had written the prescriptions with 72 errors, doctors with MBBS WITH PG (Bachelor Of Medicine/ Bachelor Of Surgery With Post Graduation.) had prescribed the prescriptions with 1225 errors, doctors with BAMS (Bachelor Of Ayurvedic Medicine And Surgery) has prescribed the prescriptions with 77 errors and RMP (Registered Medical Practitioner) prescribed the prescriptions with 29 errors.

Most of the errors in the study are done with the prescribers with the higher qualifications.

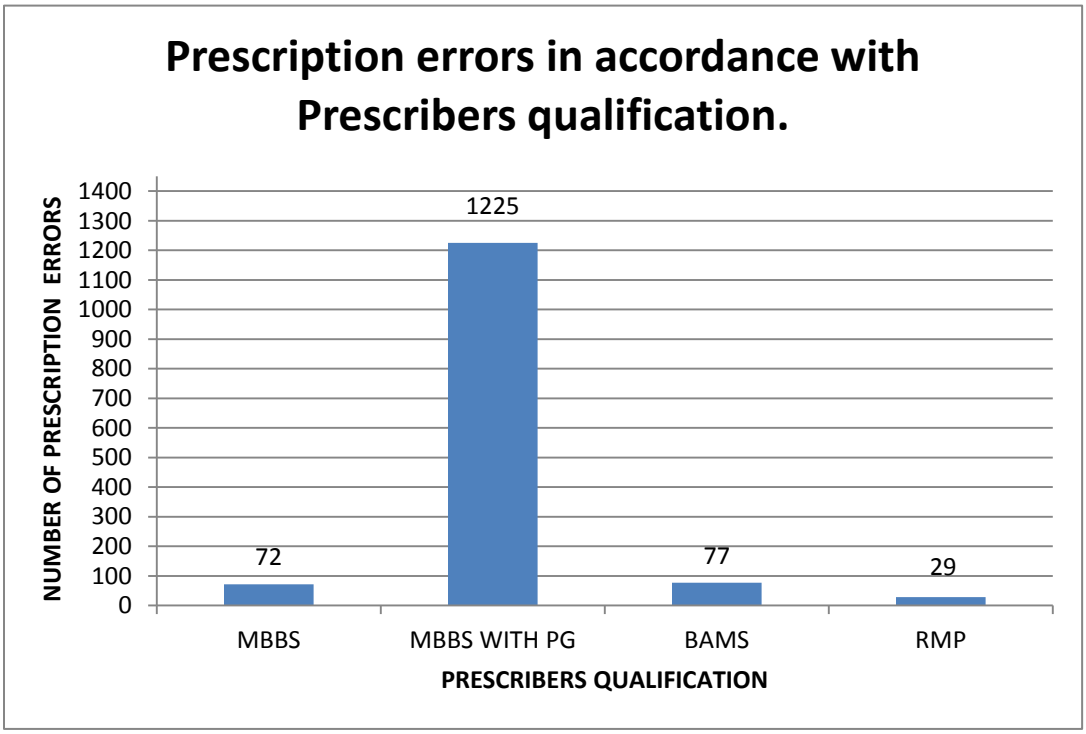


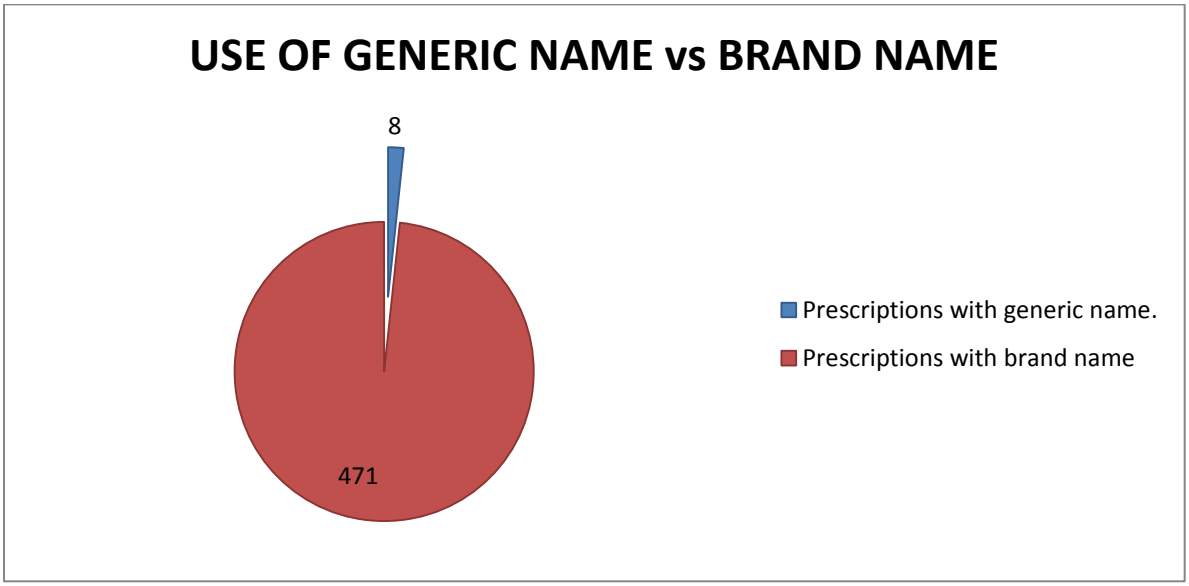
Table. 6. System of Medicine used

System of medicine used while treating the patient was also ascertained during this study, it was found that the most commonly followed system is allopathic with 461 out of 479, Ayurvedic with 14 followed by homeopathic system of medicine of 4.

S. No	System of Medicine	Number	Percentage
1	Allopathic	461	96.2
2	Ayurvedic	14	2.9
3	Homeopathic	04	0.8.

Figure.3 Use of Generic name versus Brand name

A prescriber is allowed to write the prescription only with generic names, it was found in this study that out of the 479 prescriptions 471 are prescribed with branded drugs and only 8 prescriptions are with generic drugs.



DISCUSSION:

Findings of the above study:

On performing the above observational study, the author has detailed the results of the findings below.

- The above study has involved prescriptions of both the genders and different age groups and not specific to any.
- The prescriptions studied from different prescribers were found not having the basic information like the letterhead, date, prescriber's contact information etc. Basic

information like the age of the patient, weight and even gender were not mentioned on the prescription.

- There was no specific medium of language that was used for writing a prescription. Some of the prescriptions were written partly in two different languages. So, it would be difficult for a person working the pharmacy to understand the medications in different languages. Which may lead to a prescription error.
- Dosages were hardly mentioned in any of the prescriptions. Usually, dosages particularly vary from different age groups and different gender. Generalized dosages would lead to dosage errors.
- The legibility of the prescriptions was the toughest part. Since most of the prescriptions are hand written in India, it is really hard to understand the handwritings of different prescribers. Sometimes the pharmacists also take a wild guess of the medications if not understood[17]. This would lead to prescription error.
- The study shows that doctors with higher degree of education made more errors. The author's opinion is that since these doctors want to treat more patients in a shorter period of time, they usually hurry things and this leads to them making errors on the prescription. This error would lead to a prescription error.
- There are lot of scenarios were the pharmacist and the doctor have commercial understanding between them. This leads to prescribing branded drugs even when the cheaper versions of generic drugs are available at the store. Sometimes even if the prescriber prescribes the generic drugs, the pharmacist dispenses brand drugs.

The author's suggestions for the betterment of community pharmacies will be a systematic approach with a special focus on patient safety. The author will outline few suggestions that will

improve the current and the future prescription writing and patient safety measures in India. The strategies that will be proposed will have the patient as the primary focus in the community which consists of different health care professionals and pharmacies.

- Quality of pharmacists: As the author mentioned that a professional degree is required for a pharmacist to dispense any medication, author would strongly suggest that the Indian Pharmaceutical Association (IPA) should make stringent rules and regulations such that only qualified pharmacists can work as a pharmacist in a pharmacy.
- This will not be a big hurdle because there are zones which are monitored by zonal Drug Inspector who is responsible to ensure that only qualified pharmacists work in pharmacy.
- Like in the US, it is the doctor who only diagnosis a disease and the pharmacist give the prescription. IPA can make similar rules like the above, where the pharmacist is given complete authority to prescribe medications for a patient
- The results in my study show nearly 38% of the prescriptions written by the doctor are not legible for the pharmacist, which leads to prescription error or medication error. The author would suggest the IPA to design rules for a provider, doctor, physician to give a prescription which is not manually written and is printed through an electronic device. The author would even suggest that these electronic prescriptions have a special font on the doctor's letter head. This will be not being very hard for IPA to implement. This is not very practical but worth of a suggestion.
- Another suggestion would be that a pharmacist should only accept prescriptions which are legible and from a qualified health care professional. A pharmacist simply should not guess what the medication is if it is not clear on the prescription, medications that are written on the piece of paper and verbally requested should not be encouraged.

- The Registered Medical Practitioner (RMP) should not give out prescription or at least restrict their prescription to general diseases. This would be hard to implement but this would reduce prescription/medication errors to a great extent.
- In India, patient records are not maintained either by the pharmacist or healthcare professionals, the author suggests that the IPA proposes new measures to maintain patient records both by the, pharmacist as well as the doctor's office. This will help in taking a follow up of the previous medications prescribed and any reported adverse events.
- Patient education**:** Pharmaceutical group of European Union reported that, in Europe there is a professional relationship between the health care professionals, pharmacist and the patient this relation helps in reducing medication errors and prescription errors to a great extent[19]. In European countries the patient usually gains sufficient knowledge on the medications that is prescribed from healthcare professionals and the pharmacists. The author suggests this to be implemented in all the developing countries especially India where a large population is uneducated. This would be tedious process but very useful.
- Dispensing errors: These are the errors which are mainly done by the pharmacists, while they set to dispense any drugs they have to look at medications which he is dispensing is same medicines as prescribed and the dosage of medication and the expiration of the drugs should be checked thoroughly and the usage of the drugs and the drug interactions should be clearly mentioned
- According to pharmaceutical group of European union, a study in Sweden some of the pharmacies are installed with specific software that the pharmacists will enter the dispensing errors and the drug interactions which comes to their notice and all that data will be stored into a data base which will generates the report twice in year with the help

of this report the community pharmacists will take the actions accordingly.[15] The author suggests that India should follow this process that will reduce most of the prescribing errors, this will be a costly process to India but that helps a lot.

- Many of the patients won't go the same doctor every time they keeps on changing the doctors for the betterment of the treatment, this will leads to the prescribing of different drugs, this may leads to adverse events. If there is a communication between the health care professionals of the same location will help them to discuss the types of the drug dispensed to a particular situation.
- A study in Portugal shows that they introduced a 2 way communication sheet which was given to the patient by the pharmacist and doctors with all the information related to the drugs are filled which will helps mainly to reduce the prescription errors.[15] The author suggests to IPA to introduce this kind of rule in India which costs nothing to them but this impacts more in reducing the prescription errors.

CONCLUSION

From the above studies, the author concludes that India a fast growing nation is still lagging behind in their pharmacy practices. The author would suggest that India should develop a protocol similar to either USA or Europe keeping in mind the Indian economy. Error reporting systems need to be developed to minimize prescription errors, medication errors and other administration errors. A lot of improvement can be seen if at least a few of the suggestions mentioned above are implemented.

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