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Assessing the adherence of randomly collected prescriptions at the pharmacy desk to the trust guidelines

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ABSTRACT

Aim: The aim of this study is to determine the quantum and type of errors in prescription writing and to determine the percentage of prescriptions complying to TRUST guidelines. Our study investigates the south Indian scenario of prescribing errors which despite existing guidelines and indicators is being flouted widely by prescribers.

Materials and methods: This is a cross sectional study done at Amrita Institute of Medical Sciences, Kochi, from July to September 2019. The investigator visited various pharmacy desks of the institution and took prints of computerised and xerox of the hand-written prescriptions without patient or doctor identifiers. The so collected prescriptions were analysed according to the MS excel spreadsheet format under various categories. Based on the percentage of prescription errors corresponding to age, strength and dose/frequency observed in earlier publications and with 95% confidence and 20% allowable error the sample size taken was 300.

Results and Conclusion: The total number of prescriptions collected were 300 of which 58.7 % were computerized and 41.3% were handwritten. Among the handwritten prescriptions 78.1% were legible and capital letters were not used for drug names in 100% of cases. Generic names were used in 4.2% of all prescriptions. Non pharmacological instructions were used in 0.3% of all prescriptions.The average of total number of drugs used in a prescription was 2.25. This study showed very clearly that despite awareness and sensitization to prescription writing there were many transgressions from guidelines. There is need to re- sensitize doctors periodically to ensure appropriate and effective prescribing.

Keywords: Prescribing error, Generic drugs, TRUST guidelines, Medication error, Prescription, Prescription Compliance

INTRODUCTION

A prescription is the conduit of appropriate remedy to relieve the symptoms and suffering of a patient. The prescription is an important legal document and to be effective in its objective of healing the sick, it has to comply to the methodology of basic guidelines that govern it i.e. TRUST guidelines.

A prescription being a legal document in healthcare, the onus lies with the prescriber as well as the pharmacist dispensing according to the prescription. The emergence of wanton prescriptions adds to the woes of the patient, who bears the brunt of medication errors.

A Prescribing error is defined as "*A clinically meaningful prescribing error occurs when, as a result of a prescribing decision or prescription writing process, there is an unintentional significant reduction in the probability of treatment being timely and effective or increase in the risk of harm when compared with generally accepted practice.*"[1]

Prescription errors are the most common cause of preventable adverse drug events (ADE)[2]. Fatal medication errors account for approximately 10% of medication errors

reported and are most frequently the result of improper dosing of the intended drug and administration of an incorrect drug [3]. Several authors have reported on statistics of prescribing.

In a study done in central hospital in West Bank The physicians' handwriting was poorly readable or illegible in one-third of the prescriptions. The prescriber's name and signature and patient's name were mentioned in almost all orders whereas the patient's age was stated in 54.9%. The vast majority of physicians (95.5%) prescribed drugs using their trade (brand) names. Drug strength, quantity and dose/frequency were stated in 61.1%, 76% and 73.8% of prescriptions respectively. [4]

In another prospective observational study carried out for a period of 8 months at a tertiary care hospital, the observed medication errors were assessed for level of harm by using NCCMERP index. The outpatient prescriptions were screened for adherence to WHO prescription writing guidelines. Out of 200 patients, 40 patients developed medication errors. Most of the medication errors were observed in the age group above 61years (40%). Majority of the medication errors were observed with drug class of antibiotics 9 (22.5%) and bronchodilators 9 (22.5%). Most of the errors were under the NCCMERP index category C. Out of 545 outpatient prescriptions, 51 (9.37%) prescriptions did not have prescriber's name and all of the prescriptions lack prescriber's personal contact number. Eighteen prescriptions did not have patient's name and 426 (78.2%) prescriptions did not have patient's age. The prevalence of medication errors in this study was relatively low (20%) without any fatal outcome. Omission error was the most frequently observed medication errors(77.5%). The patient's age was missing in 78.2% of the prescriptions and none of the prescriptions had patient's address and the drug names were not mentioned by their generic names. [5]

Our study investigates the prescribing errors occurring across a month at the pharmacy desk of a tertiary care centre. Many of the prescription audits have not been assessed following trust guidelines which is a comprehensive method for assessing prescription validity. Our study investigates the south Indian scenario of prescribing errors which despite existing guidelines and indicators is being flouted widely by prescribers.

The primary objective is to determine the quantum and type of error in prescribing and the secondary objective is to determine the percentage of prescriptions complying to TRUST guidelines.

MATERIALS AND METHODS

This is a cross sectional study done at Amrita Institute of Medical Sciences, Kochi, from July to September 2019. The investigator visited the various pharmacy desks of institution and took prints of computerised and xerox of the hard-written prescriptions without patient or doctor identifiers. The so collected prescriptions were analysed according to the MS excel spreadsheet format under various categories as listed under the TRUST guidelines.

TRUST Guidelines

All prescriptions must:

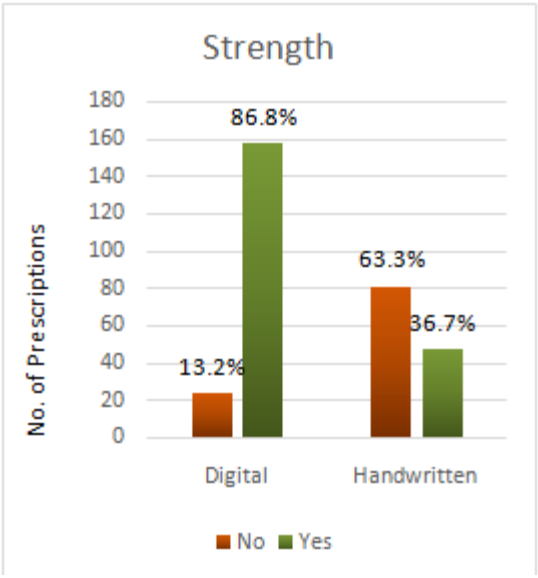
- Be printed clearly in indelible black ink
- Be accurate and unambiguous
- Use English instructions where appropriate
- Avoid abbreviations of medicine names
- State the form, strength, metric dosage, route of administration, frequency and time (24 hour clock) of doses. The dose interval and maximum number of doses in the treatment period should be specified for 'as required' medicines
- The patient's full name (initials for patient's forename are not acceptable)
- Hospital/ NHS number
- Date of birth
- Known allergy status or hypersensitivity, if no known allergies this must be recorded. Allergy status must be signed and dated
- Ward / Clinical Area
- Consultant
- Weight (kg) (if appropriate)
- Approved generic medicine name, unless differences in bioavailability between preparations dictate a specific brand should be prescribed e.g. anticonvulsants
- Date treatment commenced. The anticipated stop date should be entered where appropriate. Please refer to the Antibiotic Policy (available on the intranet) for treatment lengths for antibiotics
- Prescribers name and signature
- Non-medical prescribers in community, must put their professional registration number and the GP code on the FP10s they have prescribed on
- Antibiotics must be prescribed according to the Trust Antibiotic Prescribing Guidelines with the indication, the length of the course of treatment clearly specified and a review date. Restricted antibiotics may be prescribed only on the instructions of a Consultant Microbiologist
- Metric units must be used when prescribing. Decimal points should be avoided where possible. If used when prescribing, the decimal point must be preceded by a zero for doses less than one whole metric unit (e.g. 0.5ml not .5ml). The terms microgram and nanogram must not be abbreviated.
- Roman numerals should not be used.
- When prescribing insulin, the type of insulin, the brand of insulin and the device used by the patient must be clearly annotated on the medicine chart. All doses prescribed must be annotated with the word "units" The abbreviation "U" or IU" must not be used.
- Liquid preparations should have the strength of the preparation written against the medicine name, e.g. amoxicillin syrup 250mg/5mL. The dose should state the drug quantity as well as the liquid volume e.g. amoxycillin 250mg (5ml).
- The route of administration must be identified on the prescription
- Where appropriate, the site of application should also be specified, e.g. left eye.

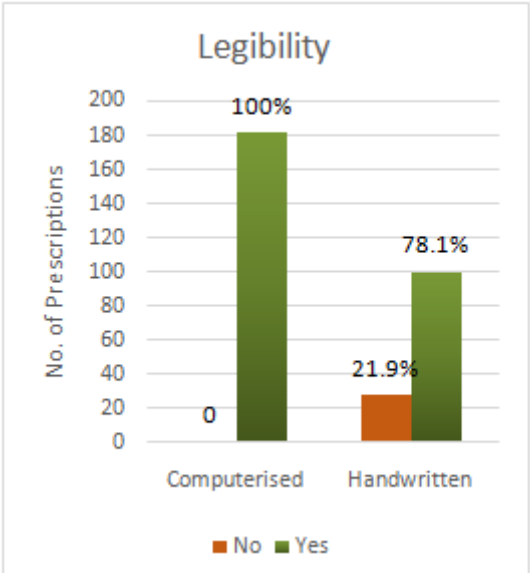
Based on the percentage of prescription error corresponding for age, strength and dose/frequency observed in an earlier publication [1] with 95% confidence and 20% allowable error the minimum sample size comes to 117 for age prescription error, 151 for strength prescription error and 261 for dose/frequency prescription error. In my study I will be including a sample of 300 prescriptions.

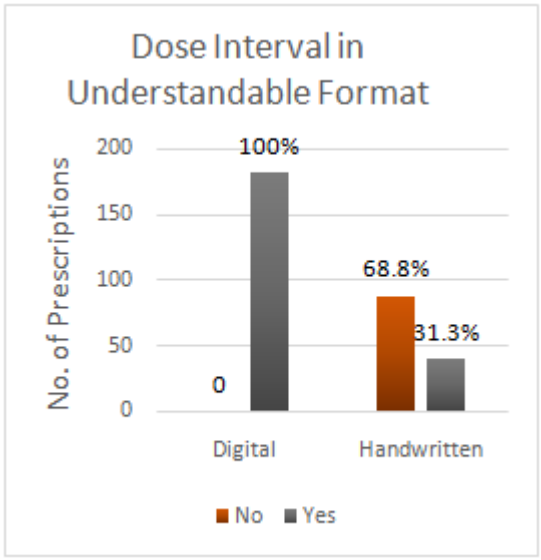
Handwritten and computerised prescriptions were included and the prescriptions that do not have drugs and have only devices and materials (sponge, band aids) were excluded.

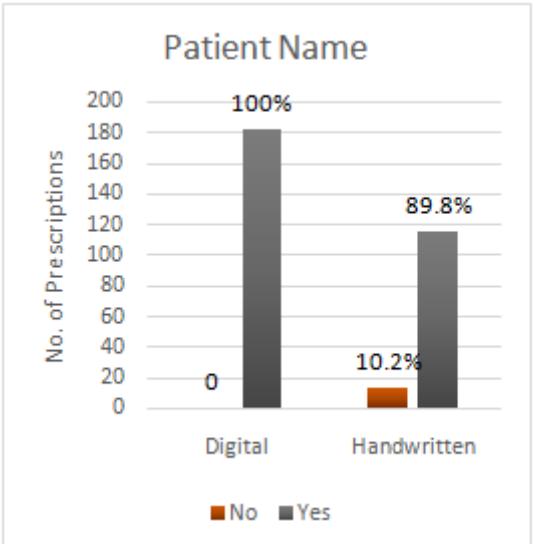
Data collected was entered into MS Excel and analysed using SPSS version 20. Descriptive statistics was applied for prescription errors.

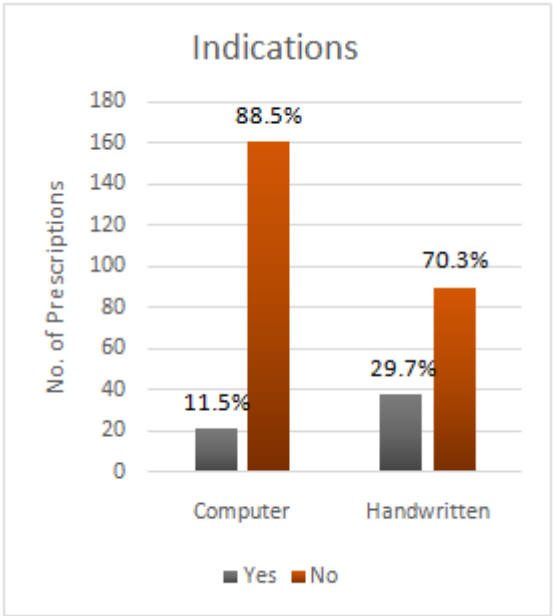
OBSERVATION & RESULTS






Dose Interval in Understandable Format
No. of Prescriptions
200
150
100
50
0
100%
68.8%
31.3%
0
Digital
Handwritten
No
Yes


Patient Name
No. of Prescriptions
200
180
160
140
120
100
80
60
40
20
0
100%
89.8%
10.2%
0
Digital
Handwritten
No
Yes


Indications
No. of Prescriptions
180
160
140
120
100
80
60
40
20
0
88.5%
70.3%
29.7%
11.5%
Computer
Handwritten
Yes
No

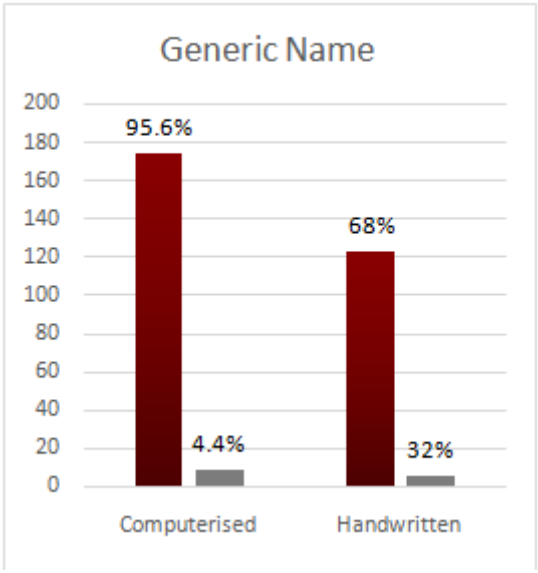


Table 1: Percentage of errors observed

	DIGITAL	HANDWRITTEN	TOTAL
Pharmacological instructions present	57.7%	23.4%	43.5%
Non-pharmacological instructions present	0%	0.8%	0.3%
Abbreviations avoided	95.1%	85.2%	91%
Form written	100%	46.1%	77.7%
Route of administration given	96.7%	0%	56.8%
Consultant's signature	100%	55.5%	81.6%
Total tablets or vials mentioned	0%	51.6%	21.3%
Duration	100%	5.8%	82.6%
Dose Interval	100%	77.3%	90.6%
Sex	100%	0%	58.7%
Age	0%	11.7%	4.8%
Consultant's name	100%	55.5%	81.6%
Commencement date	100%	68%	86.8%
Date to Stop	100%	45.3%	77.4%
Prescriber's name	0%	88.3%	36.5%
Antibiotics prescribed	11.5%	29.7%	81%
Metric units	98.9%	87.5%	94.2%
Roman numerals avoided	64.3%	78.9%	70.3%

Antibiotics were present in 19% of the prescriptions out of which 1.9% contained restricted antibiotics. Among the restricted antibiotics prescribed, none of them had a microbiologist recommendation.

The average number of drugs per prescription is 2.25 with a standard deviation of 1.341 and range of 8

From the results, it is observed that none of the prescriptions are complying to the TRUST guidelines. The errors are significantly higher in handwritten compared to digital prescriptions.

The most common errors found in the prescriptions, both handwritten as well as computerized, were the absence of non-pharmacological instructions (99.7%) and prevalent use of generic names (95.8%).

DISCUSSION

Our study investigated the compliance to TRUST prescribing guidelines at Amrita Institute of Medical Sciences. A total of 300 prescriptions were considered. The digital prescriptions were 58.7% and handwritten were 41.3%.

The number of legible prescriptions among the handwritten were 78.13%. In the present digital age, the problem of legibility is not of much consequence and legibility was 100% among digital prescriptions. Other studies[6] also showed the legibility was not an issue with computerised prescriptions and almost 100% of prescriptions were legible. For handwritten prescriptions the MCI code of ethics also insists that doctors should prescribe in capital letters. This would circumvent the problems to a small extent; however, this is rarely being followed.

Pharmacological instructions were present in 57.7% of digital and 23.4% of handwritten prescriptions. Pharmacological instructions considered were the method of drug intake; e.g. to be taken on empty or full stomach, not to be taken with milk, taken early in the morning etc. Yousef et al found that only 18.1% of the prescriptions had pharmacological instructions in his study.[7]

Nonpharmacological instructions were alarmingly not present in 100% of digital and 99.2% of handwritten prescriptions. Nonpharmacological are as important as pharmacological instructions. E.g. A hypertensive patient not salt restricting is counterproductive, a bronchial asthma patient not stopping smoking is again counterproductive.

From the prescriptions analysed 95.1% digital and 85.2% handwritten prescriptions were not having abbreviations. e.g.: DPT for Demerol-Phenergan-Thorazine, TAC for triamcinolone. Although glad to see that abbreviations were used to the minimum it is still imperative to curb this behaviour.

With regard to the main body of the prescription, dosage form was written in 100% of digital and 46.1% of handwritten prescriptions amounting to a total of 77.7% of all prescriptions. This result is similar to Tayem et al where 73.8% of prescriptions had dosage form written

The strength was written in 86.8% of digital and 36.7% of handwritten prescription, i.e a total of 66.1% prescriptions had mentioned strength. This is again similar to Yousef et.al where 59.7 % prescriptions had strength.

Less than half of the prescription contained the quantity that the pharmacist should suspend for all drugs.

A stark contrast can be observed with regard to route of administration where in digital prescription 96.7 % had route of administration present while none of the handwritten ones had it.

The duration of treatment was present in all digital prescriptions while it was present only in 57.8% of handwritten prescriptions.

Dose interval was present in all digital and 77.3% of handwritten. Among the digital prescriptions, it was automatically calibrated to provide a simple understandable format for the patient (1-0-1, 1-0-0, etc), only 31% of handwritten prescriptions had the dose interval written in simple understandable format, which compared to study of Tayem et al is better where only 1.5% had dose interval mentioned.

85.2% of handwritten prescriptions had signature. The doctor's name was written separately in only 55.5% of them. On the other hand, all the digital prescriptions had automatically inbuilt signature and name of the doctor.

Patient's name was present in 100% of digital and 89.8% of handwritten prescriptions. Patient's age was present only in 11.7% of handwritten prescriptions while none of the digital ones mentioned it as there was no column assigned for age in the prescription format used. None of the prescriptions included the patient's address, occupation, or weight. This is much lesser than Evans et al [(6)] where 47% of handwritten prescriptions had age.

Alarmingly, only 4.2% (digital 4.4% and handwritten 3.9%) of all prescriptions were written by their generic name. In contrast, according to Dilnasheen et.al[5] Ethiopia had 98.7% and Nigeria had 42.7%. There is a need to implement the policy of generic prescribing in India, as it reduces the cost of the drug, both to the patient and the pharmacy. This will also facilitate to diminish unethical marketing strategies taken up by some pharmaceutical industries.

None of the prescriptions had allergic status or ward name / number written in them. It is also alarming to see that, none of the prescriptions had the diagnosis / indications mentioned. The review date was also not mentioned in any of the prescriptions

Antibiotics were present in 19% of the prescriptions out of which 1.9% contained restricted antibiotics. Among the restricted antibiotics prescribed, none of them had a microbiologist recommendation. This was a dangerous practice as non-judicious use of antibiotics can lead to increased antibiotic resistance.

It is encouraging to see that almost 95% of all prescriptions had metric dosage units. The abbreviation of mcg for micrograms was avoided in an astonishing 99.5% of prescriptions. This is commendable as it reduces the chances of confusion. Also, Roman / Latin terminologies were avoided (bd, td, qid, etc.) in approximately 70% of all prescriptions

The average number of drugs per prescription is 2.25 with a standard deviation of 1.341 and range of 8.

From the results, it is observed that none of the prescriptions are complying to the TRUST guidelines. The errors are significantly higher in handwritten compared to digital prescriptions.

There is lack of necessary information in the prescriptions and this can lead to errors in the dispersal of right drugs in the right quantity and lack of proper instructions can lead to further complications and reduced patient satisfaction.

The prevalence of high number of errors in the prescriptions points towards the need of improving the current practices and quality of prescription writing.

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