International Journal of Research in Medical Sciences
Saha A et al. Int J Res Med Sci. 2018 Apr;6(4):1241-1247
www.msjonline.org
pISSN 2320-6071 | eISSN 2320-6012
DOI: http://dx.doi.org/10.18203/2320-6012.ijrms20181275

Original Research Article

Prescription audit in outpatient department of a teaching hospital of North East India

Arjun Saha, Himadri Bhattacharjya*, Bitan Sengupta, Rajkishore Debbarma

Department of Community Medicine, Agartala Government Medical College, Agartala, Tripura, India

Received: 17 January 2018
Accepted: 26 February 2018

***Correspondence:**
Dr. Himadri Bhattacharjya,
E-mail: hbhattacharjya@rediffmail.com

ABSTRACT

Background: Quality of the prescriptions generated from OPD of Agartala Government Medical College and Govinda Ballabh Pant Hospital is never assessed. The study objectives were to find out the quality in terms of legibility, completeness and adherence to WHO core prescribing indicators of the prescriptions generated from OPD of this hospital.
Methods: This hospital based cross-sectional study was conducted during 11th to 16th December 2017 among 442 prescriptions picked up from 12 OPDs by multi stage sampling technique and examined using a checklist designed to assess adherence to WHO core prescribing indicators, legibility and completeness. Data entry and analysis were performed with computer using SPSS 15.0. Descriptive statistics and Chi-square test were used to present data.
Results: Total 1169 items were prescribed in 442 prescriptions. Only 50.90% prescriptions were legible. Average number of drugs prescribed per encounter was 2.64, 223 (19.07%) were generic drugs, 14 (1.19%) were injections, 176 (15.05%) were antibiotics and 618 (52.86%) items were from the national essential drug list. History was written in 62.70%, findings were written in 52.70%, diagnosis was written in 40.00%, 87.80% prescriptions contained no review instructions, 84.60% contained complete directions to the pharmacist, 87.10% did not contain complete direction to the patients and signature section was incomplete in 99.80% of the prescriptions. Significantly higher proportions of the high ranked prescribers wrote generic items, review instructions and complete directions to the patients in their prescriptions ($p < 0.05$).
Conclusions: Most of the prescriptions generated from OPD of Agartala Government Medical College and Govinda Ballabh Pant Hospital were found to be incomplete, about half of them were illegible and sizeable proportions did not adhere to the WHO core prescribing indicators.

Keywords: Outpatient department, Prescription audit, Tripura

INTRODUCTION

Prescription is an instruction written by a medical practitioner that authorizes a patient to be issued with a medicine or treatment. Identity of a doctor or a hospital is also reflected to the patients to a great extent by means of prescriptions. It is an important document in the process of treatment. Prescription writing reflects the physician's skill in the diagnosis and attitude towards selecting the most appropriate cost effective treatment.[1,2] The word "prescription" from "pre" ("before") and "script" ("writing, written"), refers to the fact that the prescription is an order that must be written down before a compound drug can be prepared. Prescriptions may be entered into an electronic medical record system and transmitted electronically to a pharmacy. Alternatively, a prescription may be handwritten on preprinted prescription forms that have been assembled into pads or printed onto similar

forms using a computer printer. A standard prescription usually begins with the section called superscription, which includes date, name, age, sex, address, weight of the patient etc. and a symbol 'Ʀ' meaning "take thou". Next are the medications including dosage etc. called inscription. Subscription contains direction to the pharmacist. Signa is the portion containing direction to the patients. At the end there is signature which contains prescriber's name, signature, designation, regd. no. etc.

Medical audit is defined as the review and evaluation of health care procedures and documentation for the purpose of comparing the quality of care that is provided with accepted standards.[3] Prescription audit refers to studying the prescribing pattern in order to monitor, evaluate and if necessary, suggest modifications in the prescribing practices of medical practitioners, so as to make the medical care rational and cost effective.[4] Apart from medico legal aspects, rational use of drugs, writing generic medicines and most importantly legibility and completeness of a prescription is very important to provide quality healthcare.

In the present era of knowledge explosion neither patient nor anyone can be kept in darkness regarding the whole process of patient management. Every patient has also got the right to information. Frequently spurious medical practitioners are identified but often late and commonly after occurrence of some serious adverse events following prescription of drugs. These fake practitioners often write either misleading or false subscriptions in their prescription. Medical Council of India is also insisting upon the prescription of drugs in generic names written in legible capitals. Apart from World Health Organization (WHO), Government of India has also formulated national essential drug list and trying that it is followed nationwide by the prescribers.[5]

To ensure quality healthcare and to bring about transparency, it is necessary to conduct prescription audit periodically so that corrective actions can be initiated then and there. The cost of prescribed drugs poses problems in developing countries such as India, which allocates only 0.9% of its Gross Domestic Product (GDP), i.e. Rs. 200 per capita, to health.[6] Indian markets are flooded with over 70,000 formulations, as compared to about 350 listed in the WHO essential drug list, and pharmaceutical companies encourage doctors to prescribe branded medicines, often in exchange for favors.[7]

Government has taken initiatives to make generic drugs available to the patients which are equally effective at the same time much cheaper than their branded counterparts. To reduce the cost of treatment and to ensure quality, government has earlier directed the doctors to prescribe generic medicines and to make rational use of drugs. Apart from teaching the theoretical part, medical colleges and other teaching hospitals are expected to practice the standard norm of writing prescription in reality so that the pass outs do practice the same in future. WHO has proposed five core indicators for assessing the quality of prescriptions, which is widely used for this purpose.[8]

But quality of the prescriptions generated from Outpatient Departments (OPD) of Agartala Government Medical College and Govinda Ballabh Pant Hospital (AGMC and GBPH) is never assessed. Hence, this study was designed to find out: the proportion of prescriptions which are legible, written in complete format and the quality by comparing against the WHO core prescribing indicators.

METHODS

This hospital based cross-sectional study was conducted in the Outpatient Department of Agartala Govt. Medical College and Govinda Ballhabh Pant Hospital, Agartala during 11th to 16th December 2017 among 442 prescriptions using a pre-designed and pre-tested structured check list specially designed for prescription audit. It was planned to include all the prescriptions generated from 12 major OPDs namely: Medicine, Surgery, Obstetrics and Gynaecology, Orthopedics, Paediatrics, Chest medicine, PMR, ENT, Ophthalmology, Psychaitry, Dermatology and Dentistry during one time unit consisting of two hours per day for one week period in this study.

For this purpose multi stage sampling method was followed to select the study period and the OPD hours. At the first stage, one week of a month i.e. second week of the month of December'17 was selected randomly and eight daily OPD hours (8-30 AM to 4-30 PM) was divided into four equal time units and one such time unit i.e. 10-30 AM to 12-30 PM was chosen randomly. Data collection continued for the whole study week from 11th December 2017 to 16th December 2017. Thus, random sample of prescriptions collected from all the 12 major OPDs of AGMC and GBPH in this way are expected to give a snapshot view of the prescription pattern in AGMC and GBPH Outpatient Department.

Only the first encounter prescriptions generated during the study period and time were included in the study. Prescriptions containing no medicines, old prescriptions written before the study period, prescriptions of severely ill patients requiring urgent hospitalization and prescriptions of the patients not willing to participate in the study for any reason were excluded from this study. Doctors belonging to the rank of Associate Professor and Professor were defined as 'higher ranked' prescribers, Assistant professors as 'mid ranked' and doctors below the rank of Assistant Professor were defined as 'low ranked' prescribers and if in any OPD, doctors of different ranks were working together, the higher rank was recorded as the rank of the prescribers. 'Legible prescriptions' were those where all the scripts could be easily read by the study team. Prescriptions, which could be read with difficulty, were labeled as 'legible with effort' and prescriptions, which could not be read either

by the study team or by some literate person from outside the study team as 'illegible prescription'. Multiple drugs prescribed in combination were considered as single item.

The following WHO/INRUD prescribing indicators were used in this study and were calculated using standard methods.[9]

- Average number of drugs prescribed per encounter (whether the patient actually received the drugs or not). Optimal level: ≤3.
- Percentage of drugs prescribed by generic name. Optimal level: 100%.
- Percentage of patient encounters with an antibiotic prescribed. Optimal level: ≤30%.
- Percentage of patient encounters with an injection prescribed. Optimal level: ≤10%.
- Percentage of drugs prescribed from the national EDL or the facility's formulary. Optimal level: 100%.

Optimal level: 100%. A group of undergraduate medical students having clinical posting in the Department of Community Medicine were trained in research methodology. They were divided into 12 teams consisting of two members in each team. These teams were deputed outside the above mentioned OPDs being accompanied by the Medical Social Workers (MSW) of Community Medicine Department under the guidance of the authors for collecting data. But the prescribing doctors inside OPDs were not informed about the study to avoid bias. Informed written consent for participation in this study was sought from the patients coming out from these OPD rooms after doctor consultation.

Prescriptions of the consenting patients were scanned by android mobile phones. The scanned soft copies of prescriptions were labelled and sent to a designated mail box by e-mail. Later on, the scanned prescriptions were retrieved from the mail box and required data from them were entered in the checklist prepared for this study. The check list contained data regarding WHO core prescribing indicators for a prescription.

These were department and rank of the prescribers, completeness of the prescriptions in terms of patient's name, age, sex, address, date, weight, Rx symbol etc., legibility, clinical history, number of items prescribed, number of items prescribed in generic names, direction to the patient and pharmacist, doctor's signature etc. One checklist was used for collecting data from one prescription. Though WHO has already validated this checklist, we piloted it upon 25 prescriptions for assessing its validity in the present setup. Finally, data from all these checklists were entered and analyzed in computer using SPSS version 15.0 and Epi-info-version-7.[10,11] Descriptive statistics like mean and proportion etc. were used and Chi-square test was used to test the significance of difference between two or more proportions. A p-value of ≤0.05 was considered statistically significant.

RESULTS

During the sampled time period of data collection 664 prescriptions generated from the 12 different OPDs of Agartala Government Medical College and Govinda Ballabh Pant Hospital were examined. Among them, 157 were old prescriptions written before commencement of this study and were on follow-up visits, 38 prescriptions were excluded as patients of these prescriptions refused to participate in this study and 27 prescriptions did not contain any medicine, thus 222 prescriptions met exclusion criteria and finally 442 prescriptions were included in this study and these were scanned. Majority 65 (14.70%) of the prescriptions were written from the Department of Orthopaedics, followed by 58 (13.12%) from Medicine, 53 (11.99%) from Dermatology and 2 (0.45%) each from the Departments of Chest Medicine and psychiatry.

Table 1: Prescribing generic items and items from national essential drug list (NEDL) by rank of the prescribers.

Variables	Subgroups	Rank of the prescribers			Significance
		High, n (%)	Mid, n (%)	Low, n (%)	
Generic items	Prescribed	30 (45.50)	50 (27.50)	65 (33.50)	$\chi^2 = 7.182$
	Not prescribed	36 (54.50)	132 (72.50)	129 (66.50)	p = 0.028
Items from NEDL	Prescribed	48 (72.70)	151 (83.00)	159 (82.00)	$\chi^2 = 3.508$
	Not prescribed	18 (27.30)	31 (17.00)	35 (18.00)	p = 0.173

Table 1 shows that significantly higher proportions of the high ranked prescribers wrote generic items than the others (p <0.05) and higher proportions of the mid ranked prescribers wrote items from the National Essential Drug List (NEDL) than the rest though it was not significant (p >0.05). All the prescriptions were written in English using lower case and total 1169 items were prescribed in these 442 prescriptions. Average number of drugs prescribed per prescription (encounter) was 2.64. Out of 1169 items prescribed, 223 (19.07%) were in generic names, 14 (1.19%) were injections, 176 (15.05%) were antibiotics, 618 (52.86%) items belonged to the National

Essential Drug List (NEDL) and the rest were miscellaneous items. Out of total, 43.90% prescriptions were written by the lower ranked prescribers, 41.20% by middle rank prescribers and only 14.90% of the prescriptions were written by the higher ranked prescribers. Various information was found to be missing from the superscription section of the prescriptions. Personal details like address and weight of the patients though being important data were missing from 79.20% of the prescriptions. Only 50.90% of the prescriptions were clearly legible, 35.70% were legible with effort and 13.30% were totally illegible.

Table 2: Writing review instructions, complete directions to the pharmacist and patients by rank of the prescribers.

Variables	Subgroups	Rank of the prescribers			Significance
		High, n (%)	Mid, n (%)	Low, n (%)	
Review instruction	Written	16 (24.20)	22 (12.10)	16 (8.20)	$\chi^2 = 11.753$
	Not Written	50 (75.80)	160 (87.90)	178 (91.80)	p = 0.003
Complete direction to the patient	Written	16 (24.20)	19 (10.40)	22 (11.30)	$\chi^2 = 8.960$
	Not Written	50 (75.80)	163 (89.60)	172 (88.70)	p = 0.011
Complete direction to the pharmacist	Written	57 (86.40)	156 (85.70)	161 (83.00)	$\chi^2 = 0.718$
	Not Written	09 (13.60)	26 (14.30)	30 (17.00)	p = 0.698

It was observed that 54.55% prescriptions written by the higher ranked prescribers were clearly legible. Proportion of illegible prescriptions written by higher, mid and lower ranked prescribers were 6.06%, 14.29% and 14.95% respectively. Majority of the prescriptions which were legible with effort were written by either mid or lower ranked prescribers. Proportion of legible prescriptions written was highest (90.30%) from the Department of PMR, followed by Ophthalmology (66.00%) and nil from the Departments of Psychiatry and Chest Medicine.

Clinical history of the patients was found to be documented only in 62.70% of the prescriptions and it was documented by 65.20% of the high, 67.60% of the mid and 57.20% of the low ranked prescribers in their prescriptions. All the prescriptions generated from the Departments of PMR, Psychiatry and Chest Medicine contained clinical history of the patient followed by 88.90% prescriptions from the Department of Obs and Gynae; but no prescriptions from the Department of Dermatology contained clinical history.

Clinical examination findings were found to be written only in 52.70% of the prescriptions. And it was documented by 53.00% of the high, 61.00% of the mid and 44.80% of the low ranked prescribers in their prescriptions. All the prescriptions generated from the Department of Chest Medicine contained the clinical findings, followed by 86.20% prescriptions from the Department of Medicine; but no prescriptions from the Department of Dermatology contained clinical findings of the patients. Provisional diagnosis was written only in 40.00% of the prescriptions and it was written by 34.80% of the high, 35.20% of the mid and 46.40% of the lower ranked prescribers.

All the prescriptions generated from the Departments of Chest Medicine and Obs and Gynae contained provisional diagnosis; whereas no prescriptions from the Department of Dermatology contained the same.

At least one generic item was prescribed in 32.80% of the prescriptions. Item from the National Essential Drug List was prescribed in 81.00% of the prescriptions, 84.60% of the prescriptions contained complete direction to the pharmacist, 12.90% contained complete direction to the patients and only 12.20% of the prescriptions contained review instruction. Almost all the prescriptions, i.e. 441 (99.80%) did not contain complete data in signature section like: prescriber's name, signature, designation, regd. no. etc. at the bottom of the prescriptions and various components of the prescriptions were found to be either incomplete or missing. Overall 275 (62.20%) prescriptions were found to be incomplete in the superscription, inscription, signa and signature components.

DISCUSSION

Superscription is an important part of any prescription. But present study has found that in many of the prescriptions it was not properly written and personal details of the patients like address and weight etc. though being important data were found to be missing from 79.20% of the prescriptions. Similarly, a study conducted by Pavani V et al, have found that only 15% prescriptions at St. Peters Institute of Pharmaceutical Sciences, Vidyanagar, Andhra Pradesh, India, noted the age of the patients and none of the prescriptions contained patient's address.[12] Similarly, Bandyopadhyay D et al, have found that in a tertiary care teaching hospital of Eastern India 91.33% of the prescriptions did not show weight of the patients.[13] Mishra S. et al, have found that age and sex of the patients were not recorded in 5.2% and 4.8% of the prescriptions respectively.[14]

A study conducted by Wali AA et al, in a dental teaching hospital of Karachi, Pakistan, found that only 42% of the prescriptions recorded age of the patients.[15] On the contrary Ahsan M et al, have found that the prescriptions contained all the data in superscription and the reason cited was computerized registration and printing system.[16] Similarly Kumari S et al, have also found that 248 (99.2%) prescriptions contained outpatient registration number, name, age, gender etc. of the patients as the prescriptions were written on hospital registration pads.[17] But in our study despite having centralized computerized registration system, superscription was lacking address, weight etc. In the present study only 50.90% of the prescriptions were found to be clearly legible, 35.70% were legible with effort and 13.30% were totally illegible. Similarly, Kumari S et al, also found in their study that 59.2% prescriptions were illegible.[17] While a study conducted at AIIMS, New Delhi revealed that majority (93.7%) of the prescriptions were legible.[18] According to a study conducted in Sri Lanka, 208 (25.6%) of the total prescriptions were illegible.[19] Ashan M et al, have found that 8.16% of the prescriptions were illegible and 66.8% were legible with difficulty.[16] Bhattacharya A et al, have found that only 51.21% of the prescriptions were legible with effort.[7]

Moreover, places where electronic prescriptions were used, the rate of such errors were negligible.[20] To avoid such confusions, regulatory bodies in India advocate the use of capital letters while prescribing drugs.[21] The average number of drugs per prescription (encounter) was found to be 2.6 in the present study, which was at par with the WHO standard of ≤3.[9] But Pavani V, has found it to be 3.41; Jain S et al, have found it to be 3.7; Kumari R et al, have found it to be 3.1; and Mishra S et al, have found it to be 4.04.[12,14,22,23] All these findings reflect the quality of diagnosis made in various settings. This not only indicates the degree of polypharmacy but also the knowledge and experience of the prescribers and it was found to be satisfactory in our setting. Proportion of generic drugs out of the total number of items prescribed, was found to be 19.07% in this study, which was far below the WHO norm of 100%.[9]

It was found to be little better i.e. 69.26% by Sudarsan M. et al, and further better i.e. 73.4% by Karande S. et al.[24,25] But it was detected to be as low as 3.6% only by Mishra S et al, 8.33% by Jain S et al, and 27.1% by Kumari R et al, in the public health facilities of Lucknow.[14,22,23] Lower rate of prescribing generic items in the present setting may be due to the fact that 'Jan Aushadhi' counters for dispensing generic drugs were established here very recently and awareness, availability and acceptance of generic medicines may not be up to the mark. This study has found that 52.86% of the drugs were prescribed from the National Essential Drug List (NEDL), which is lower than the WHO standard of 100%.[9] Similarly Mishra S et al, have found it to be 53.25%, which is comparable with other studies conducted by Biswas NR. et al and Hazra A et al.[14,26,27] But Sudarsan M et al, have found it to be 69.26%, though it was also lower than the WHO standard.[9,24] Government and other regulatory bodies are trying to convince the doctors for prescribing drugs from the National Essential Drug List (NEDL) and it may take some time for widespread implementation. Present study has detected the prescription rate of antibiotics as 15.05%. It was at par with the WHO standard of ≤ 30%. [7] Mishra S et al, have found it to be 17.48% and Sudarsan M et al, have found it to be 39.4%.[14,24] Antibiotic prescription rate in India varied widely across different cities like, it was as high as 63.33% in Jaipur, whereas in Lucknow, it was only 20.6%.[21,23] These variations may be attributable to the prevailing disease conditions in different settings. Present study detected that provisional diagnosis was not written in 60% of the prescriptions. Gawande U et al, found it to be 54.73% and Kumari S et al found it to be 96.8%.[17,28] Though WHO does not press much up on writing the diagnosis always, but it is desirable to write it because it is helpful to both patient and the doctors, especially during repeat visits for deciding the treatment. It's importance in MIS, maintaining medical records, disease surveillance, medico-legal issues, forecasting and health research is also beyond doubt.

In the present study 87.80% of the prescriptions did not contain any review instruction. Similarly, Bandyopadhyay D et al, have found that follow-up visit was not mentioned in 97.87% of the prescriptions, Ashan M et al, found it to be 77% and Gawande U et al, found it to be 59%.[13,14,28] For holistic patient care it is necessary to instruct them when to come for check up again. Present study detected that 99.80% of the prescriptions did not contain complete data in the signature section. Like, prescriber's name, signature, designation, regd. no. etc. were not present at the bottom of the prescriptions. Signature of the doctor was found to be absent in 7.6% of the prescriptions in a study conducted by Mishra S et al, Study conducted by Ashan M et al, has revealed that no prescription contained registration number of the prescriber.[14,16] Scenario was similar in our study also.

In a study, 17.7%, 17.3% and 100% of the prescriptions were lacking in doctor's name, designation and registration number respectively and it was higher than the study conducted by Sharif SI et al.[29,30] Registration number of doctor was also missing from all the prescriptions in the studies conducted by Shelat PR et al and Siddharth V et al.[18,31] As per Code of Ethics Regulations, 2002 by Medical Council of India (MCI), New Delhi, a physician shall write his name and designation in full along with registration particulars in his prescription letter head. However, in Government hospitals; where the patient load is heavy, at least name of the prescribing doctor must be written below his/her signature.

Present study was limited only to a narrow time span. Some minor OPDs could not be covered in this study due to lack of time and other resource constraints.

CONCLUSION

Most of the prescriptions generated from OPD of Agartala Government Medical College and Govinda Ballabh Pant Hospital were found to be incomplete, about half of them were illegible and sizeable proportions did not adhere to the WHO core prescribing indicators.

Recommendations

Based upon the findings of the present study it is recommended that the central OPD registration counter may be equipped to enter all relevant data in the superscription. Prescribers are to be counseled for writing the medicines either in capital letters or some printing system may be installed to make all the writings legible. Doctors are to be sensitized for prescribing generic medicines and writing complete instructions for the patients including important clinical findings, the review instruction, provisional diagnosis and most importantly their full name, designation and registration number etc. at proper place of the prescription. A complete prescription format containing space for all the entries may be devised so that no data is missed.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee of Agartala Govt. Medical College

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Cite this article as: Saha A, Bhattacharjya H, Sengupta B, Debbarma R. Prescription audit in outpatient department of a teaching hospital of North East India. Int J Res Med Sci 2018;6:1241-7.