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Research Article

Assessment of Prescribing Trends and Quality of Handwritten Prescriptions from Rural India

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Abstract

Irrational drug use and inappropriate prescription of drugs are major problems in developing countries, and so drug use patterns need to be evaluated. The objective of the study was to investigate the prescribing patterns and quality of drug prescriptions in part of rural India. Prescriptions were obtained from patients visiting private and public hospitals in rural areas of north Maharashtra, India, and analysed retrospectively. Two well trained pharmacists collected handwritten prescriptions from patients visiting community pharmacies. The prescriptions they collected were analysed for adherence with core prescribing indicators of the World Health Organization (WHO). The evaluation of prescription quality was based on the layout, legibility and clarity of the instructions in the prescriptions. The average number of drugs per prescription was 3.31, denoting polypharmacy. The extent of prescribing drugs by generic name was strikingly low (1.5%), and the percentage of prescription of essential drugs was 52.3%. Antibiotics were prescribed in 45% of the prescriptions, with azithromycin, ofloxacin and amoxicillin being the most frequently prescribed antibiotics. The proportion of prescriptions in which injections were listed was low, 4.8%. Gastrointestinal drugs (20.6%), multivitamins (16.8%), analgesics (16.7%) and antibiotics (14.8%) were prescribed more frequently. The legibility of prescriptions was poor, and the percentages of prescriptions in which details of diagnosis, route of administration and duration of treatment were cited were 25.4%, 9.14% and 22.6%, respectively. The patient's address (9.7%) and doctor's signature (70.6%) were present in few prescriptions. The prescribers did not follow the WHO core prescribing indicators well and deviated from good prescribing practices. Interventions are needed to improve the prescription patterns in the study area.

Keywords: Medical practitioners; prescription pattern; prescription quality; rational drug use; WHO prescribing indicators

Introduction

Drugs are an integral part of the health care system has and have a vital role in maintaining human health and saving mankind. Lacunae in the availability of drug use information worldwide suggest that drug use is suboptimal [1]. To make drug use more compliantand acceptable, the World Health Organization (WHO) and the National Health Policy of India have emphasized that essential drugs should be prescribed by generic names [2-4]. Drugs that are used extensively to meet the health care needs of the population that should be available at all times in adequate quantities and in appropriate dosage forms, at an affordable price, are called essential drugs [5-8]. The Indian drug market is flooded with thousands of formulations although only about 350 drugs are listed in the WHO essential drug list. Pharmaceutical companies promote prescription of branded medicines, which results in irrational drug practices. Among the various drug products available for use in India, just 10% are sufficient for treating 90% of the clinical conditions requiring treatment with drugs [5,9]. The concept of essential drugs was introduced to accelerate the constructive influence of drugs on health status in developing countries [2,10]. Rational use of drugs requires that patients receive medications appropriate to their clinical needs, in doses that meet their requirements, for an adequate time period and at an affordable cost. The prescription patterns of medical practitioners affect the rational use of medicines [6,11-13].

Irrational drug use is observed as an outcome of irrational prescriptions in the health care systems of developing countries, including India. Irrational drug use is usually associated with polypharmacy, extensive use of antibiotics and injections, the use of drugs of doubtful safety or efficacy, prescription of medicines that is not in accordance with clinical guidelines and self-medication [11,14-16]. The consequences of irrational drug use are ineffective treatment, prolongation of disease, worsening of the condition of the patient, including even harm to the patient, and economic burden [16-19]. The use of essential drugs and rational drug use affect the quality of health care in any country significantly. Promoting the rational use of essential drugs leads to an improved quality of life in patients, with acceptable therapeutic benefits and appropriate safety. Rational use of drugs is possible only when the process of prescribing is followed appropriately by eligible prescribers [5,20].

Prescription writing is a science as well as an art, which conveys a message from the prescriber to the patient [9,21]. Under-prescribing of drugs leads to subtherapeutic effects, secondary infections and delayed treatment, while over-prescribing is associated with adverse effects, unwanted drug interactions and patient noncompliance. Thus, to avoid the consequences of under- or over-use of drugs, a proper balance should be attained. In this regard, the World Health Organization/International Network for Rational Use of Drugs (WHO/INRUD) has set standards for prescribing [9,11]. The prescription audit is an effective tool for assessing and exploring the extent of rational prescribing of drugs in a selected population [16,22,23]. Earlier studies had highlighted the fact that there are irrational drug practices in India [3,5,9,15,23,24]. The WHO drug use indicators are an important tool used to assess drug use patterns in developing countries, with the intention of promoting rational drug use [2,11,26]. Although there are several well established methods to study the extent of rational drug use, the WHO drug use indicators are a universally accepted global standard [1,27].

The majority of studies aiming to evaluate prescription patterns in India were carried out at public health centres or institutions in urban territories. To our knowledge, few studies have been conducted on the quality of prescriptions and prescription patterns of medical practitioners in rural territories. Thus, there is scope to explore irrational drug use in rural territories of developing countries, where illiteracy is prevalent, there is limited access to medical facilities and patients are not able to afford expensive drugs. In the present era of

drug resistance and irrational drug practices, there is a critical need to evaluate drug prescribing patterns and ultimate drug use through a systematic study in a selected population of general practitioners.

The present study was undertaken to evaluate the prescription patterns and quality of prescriptions written by medical practitioners in the rural territory of Shirpur, north Maharashtra, India. The prescription patterns were assessed using the WHO drug use indicators, and the quality of prescriptions was evaluated in terms of their layout, clarity and legibility and the clarity of the doses and instructions in them.

Materials and Methods

The present work was carried out from January 2014 to April 2014. It involved analysing retrospectively the prescription patterns and the quality of prescriptions issued to patients visiting private and public hospitals in rural areas of Shirpur, Maharashtra, India. Medical information relating to patients visiting 19 selected community pharmacies was collected from prescriptions. The patients were selected using a systematic random sampling method, and the sampling units were community pharmacies at health care facilities where acute and chronic illnesses are treated. Only new prescriptions were collected. Repeated or revised prescriptions were excluded from the study. The study was restricted to a sample of general illnesses, representing a mix of health problems and patient ages. Two well trained pharmacy personnel obtained data related to the prescribing indicators of the WHO from the prescriptions. Each prescription was assessed by both the pharmacists. The data obtained from each patient encounter were entered into a data sheet and were used to measure the relevance of the corresponding prescriptions with the core prescribing indicators of the WHO.

The study team compiled information on five prescribing indicators according to the guidelines of the WHO for evaluating drug use. The indicators are (a) the average number of drugs per encounter, (b) the percentage of drugs prescribed by generic name, (c) the percentage of prescriptions that involved antibiotics, (d) the percentage of prescriptions that involved injections and (e) the percentage of drugs prescribed from the essential drug list (EDL).

The WHO core indicators were calculated as described in earlier reports [1,2]. In brief, the degree of polypharmacy was measured by assessing the average number of drugs prescribed per encounter. It was calculated by dividing the total number of prescribed drug products by the number of encounters surveyed. The tendency to prescribe by generic name was assessed as the percentage of drugs prescribed by generic name. It was calculated as the ratio of the number of drugs prescribed by generic name to the total number of drugs prescribed, multiplied by 100. To estimate the use of commonly overused and costly forms of drug therapy, the percentage of prescriptions involving antibiotics was determined. This was calculated as the ratio of the number of patient encounters in which an antibiotic was prescribed to the total number of encounters surveyed, multiplied by 100. Additionally, the percentage of prescriptions involving injections was calculated as the ratio of the number of patient encounters in which an injection was involved to the total number of encounters surveyed, multiplied by 100. The percentage of drugs prescribed from the EDL was determined as a measure of the degree to which prescription practices conform to the national drug policy. This percentage was calculated as the ratio of the number of products prescribed from the EDL to the total number of drugs prescribed, multiplied by 100.

The WHO document titled How to Investigate Drug Use in Health Facilities emphasizes that a cross-sectional survey should include a minimum of 600 encounters in order to describe current prescribing practices, with a greater number, if possible [26]. In this particular study, a total of 1107 prescriptions were collected.

The quality of the prescriptions was evaluated by assessing the layout, legibility and clarity as described by Patel et al. (2005) [15]. In brief, the layout of the prescriptions was assessed on the basis of details such as the use of a letterhead, the presence of information relating to the prescriber including the name, qualifications, registration number, complete address and signature, the presence of patient-related details such as the full name and address and the date of the consultation. The clarity of the prescription was assessed through criteria corresponding to the legibility, clarity of dose and clarity of instructions. The legibility of the prescription was graded on the basis of a four-point scoring system: no problem reading all aspects of the prescription; clear but effort required; any single aspect not clear; and more than one aspect not clear. The clarity of the dose (strength and total number of daily doses) was similarly graded using a four-point scoring system: clear dose stated for all the medicines; clear, but effort required interpreting; either criterion not met for at least one medicine; and either criterion not met for more than one medicine. The clarity of the instructions provided for the patients was evaluated as (i) very clear; (ii) took effort to interpret; (iii) instructions for at least one medicine not clear; and (iv) instructions for more than one medicine not clear. Throughout this survey, the prescriber and patient names were kept confidential. The data were presented as percentage and averages.

Results and Discussion

A total of 1050 prescriptions were analysed. Actually, 1107 prescription were collected and the details recorded in data sheets. Of these, 57 records were rejected because the information was incomplete. Thus 1050 (94.8%) valid prescriptions were included in the analysis. We found that a total of 3483 drugs were prescribed by the prescribers. The average number of drugs per prescription was 3.31, with the range being from 1 to 7. Six prescriptions alone listed seven drugs. The total number of drugs prescribed by generic name was only 51 (1.5%). An antibiotic was prescribed after 473 (45%) patient encounters, and an injection was prescribed after 168 (4.8%) encounters. The number of drugs prescribed from the EDL was only 1824 (52.3%) (Table 1).

Table 1. Distribution of WHO prescribing indicators on the basis of prescribing practices

WHO prescribing indicator	Total drugs/ encounters (N)	Average/ Percentage (%)
Average number of drugs per prescription	3483	3.31
Drugs prescribed by generic names	51	1.5
Prescriptions with an antibiotic prescribed	473	45.0
Prescriptions with an injection prescribed	168	4.8
Drugs prescribed from essential drug list (EDL)	1824	52.3

Of the 3483 drugs prescribed in the 1050 prescriptions, gastrointestinal (GIT) drugs (716 drugs, 20.6%) constituted the major class, followed by multivitamins (16.8%), analgesics/NSAIDs (16.7%), antibiotics (14.8%), antihistaminic and antipyretics (7.1%). The proportion of drugs such as cough syrups, dermatological preparations, haematinics/iron supplements, folic acid and anti-malarial/anti-filarial drugs were found to be minimal in the study area (Table 2).

Table 2. Distribution of frequently prescribed drugs by prescribers

Drug	Frequency (N)	Percentage (%)
Drugs for GIT	716	20.6
Multivitamins	586	16.8
Analgesic/(NSAID's)	581	16.7
Antibiotics	516	14.8
Antihistaminic	246	7.1
Antipyretic	246	7.1
Cough syrup/bronchodilators	140	4.0
Dermatological Prep	102	2.9
Haematinics/iron folic acid	98	2.8
Anti-malarial/anti-filarial	130	3.7
Others	121	3.5
Total	3483	100

A total of 516 antibiotics were prescribed. The most commonly prescribed antibiotics were azithromycin (96, 18.6%), ofloxacin (82, 15.9%), amoxicillin (80, 15.5%) and cefuroxime (66, 12.8%) (Table 3). Amoxicillin, in both injectable (16, 20%) and oral (64, 80%) dosage forms, was one of the most prescribed antibiotics. The prevalence of other antibiotic prescriptions during the study period is shown in Table 3. The percentage of prescriptions listing injections was 4.8%. Among the injectables, the antibiotic ceftriaxone (28.9%), a proton pump inhibitor, pantoprazole (16.7%), amikacin (12.9%) and multivitamins (10.1%) were most frequently prescribed (Table 3).

Table 3. Distribution of frequently prescribed antibiotics and injections

Type of drug / route of administration	Frequency (N)	Percentage (%)
Antibiotics		
Azithromycin	96	18.6
Ofloxacin	82	15.9
Amoxicillin	80	15.5
Cefuroxime	66	12.8
Ceftriaxone	49	9.5
Fluconazole	38	7.4
Cefixime	25	4.8
Amikacin	22	4.3
Doxycycline	22	4.3
Metronidazole	10	1.9
Ciprofloxacin	06	1.2
Cotrimoxazole	03	0.6
Miconazole	03	0.6
Other	13	2.5
Total	**516**	**100**
Injections		
Ceftriaxone	49	28.9
Pantoprazole	28	16.7
Amikacin	22	12.9
Vitamin	17	10.1
Amoxicillin	16	9.6
Diclofenac	09	5.4
Artesunate	08	4.8
Dexamethasone	05	3.2
Other	14	8.3
Total	**168**	**100**

The distribution of prescriptions in terms of cost is shown in Fig. 1. A pharmacoeconomical evaluation of the prescriptions revealed that of the 1050 prescriptions, a total of 291 (27.7%) cost between INR 100 and INR 200, 273 (26%) cost between INR 201 and INR 300, 141 (13.4%) cost between INR 300 and INR 400 and 96 (9.1%) cost between INR 401 and INR 500. The number of prescriptions costing less than INR 100 was 156 (14.8%), while a few (93, 8.85%) prescriptions cost more than INR 500. The proportion of prescriptions that cost more than INR 1000 was negligible (0.1%) (Figure 1).

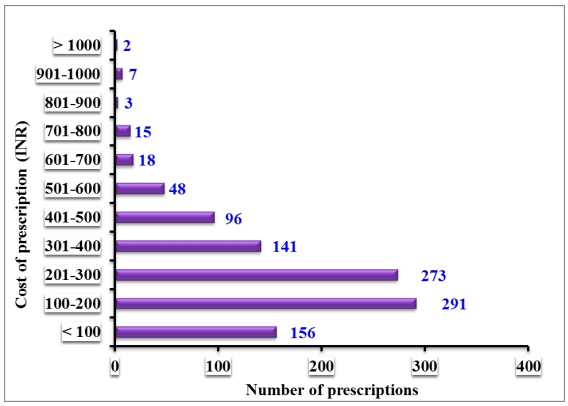

Figure 1: Pharmacoeconomy of prescriptions

The quality of the prescriptions and level of completeness were assessed on the basis of certain characteristics such as the presence of prescription components, layout and clarity, legibility, clarity of dose and instructions, etc. We observed that 64% of the prescriptions stated the patient demographics, 9.1% stated the route of administration, 94% stated the dosage form and 88.6% stated "Rx. But only 25.4% of the prescriptions described the diagnosis, 22.6% stated the duration of treatment and 87.1% stated the dose and frequency of drug administration (Figure 2).

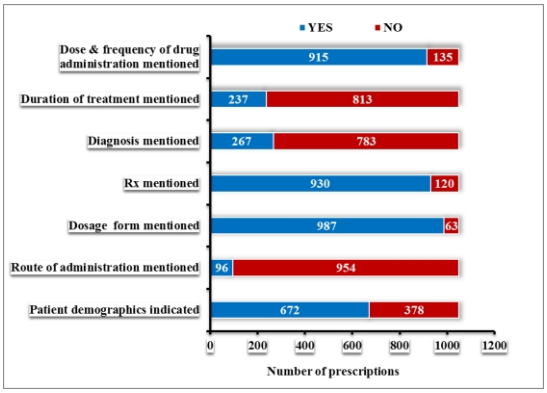

Figure 2: Adherence of prescriptions with prescription components

The findings related to the quality of the prescriptions in terms of their layout and clarity are presented in Figure 3. A total of 942 (89.7%) prescriptions were written on letterheads and contained the registration number and complete address of the doctor. The name and telephone number of the doctor was stated in 951 (90.6%) prescriptions. The qualifications of the doctor were mentioned in 990 (94.2%) prescriptions. The patient's full name was stated in 915 (87.1%) prescriptions, whereas only 102 (9.7%) mentioned the address of the patient. The date of the consultation was mentioned in 921 (87.1%) prescriptions, and 309 (29.4%) prescriptions did not have the doctor's signature.

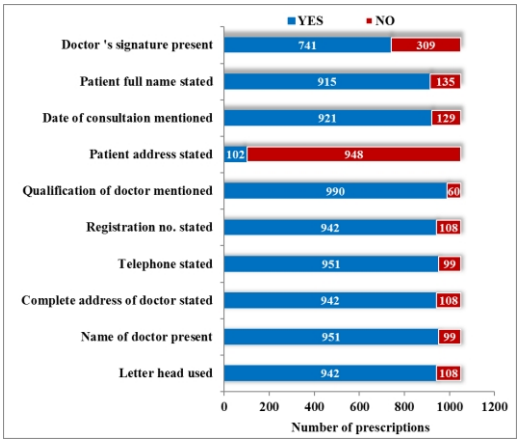

Figure 3: Compliance of prescriptions regarding layout

The legibility of the prescriptions was assessed on the basis of the criteria mentioned in the previous section (Methodology). There was no problem in reading all the aspects in 53.7% of the prescriptions. The clarity of instructions was found to be good in 59.1% of the prescriptions, and in 60% of the prescriptions, the dose, including the strength and daily dose, was mentioned clearly. Details about the aspects of legibility of the prescriptions are presented in Table 4.

Table 4. Legibility and clarity of prescriptions

Criterion	Frequency (N)	Percentage (%)
Legibility		
No problem reading all aspect of prescription	564	53.7
Clear but took efforts	243	23.1
One aspect not clear	186	17.7
More than one aspect clear	57	5.4
Clarity of instructions		
Very clear	621	59.1
Clear but took efforts	198	18.9
Instruction for one medicine not clear	162	15.4
Instruction for more than one medicine not clear	69	6.6
Clarity of dose		
Clear dose (strength & daily dose)	630	60.0
Clear but took efforts	195	18.6
Either criterion not met for one drug	150	14.3
Either criterion not met for more than one drug	75	7.1

The indiscriminate and irrational drug use has become the global tradition [28-30]. Rational drug treatment is achieved through rational drug prescribing, which has the potential to produce beneficial health effects [29,31]. Measurement of irrationality in prescription writing amongst medical practitioners has provided a reproducible tool to characterize prescriptions from particular regions [16]. The intention of this study was to explore current drug use patterns by assessing prescription patterns of medical practitioners in rural India. The study was also aimed at investigating the quality of prescriptions in terms of layout, clarity and content.

The core prescribing indicators of the WHO were developed to measure the extent of polypharmacy, tendency to prescribe drugs by generic names and proportions of antibiotics and injections used [1,8]. These indicators have already been established and validated for use in developing countries. They have been used to assess rational drug use and improve the prescribing behavior of medical practitioners [5,20,32]. The present study highlighted the components of irrational prescribing that need the attention of health care professionals, patients and the government.

The average number of drugs prescribed per encounter was 3.31, which is higher compared with the WHO reference range of 1.6–1.8 [1,2,33,34]. Prevalence of polypharmacy to the extent suggested by earlier studies from various parts of India is indicated, suggesting that there is a therapeutic tradition of prescribing more drugs than necessary in the country [5,9,12,16,35]. Although, polypharmacy is known to be a fertile ground for drug interactions, it is recommended that the potential benefits of polypharmacy be confirmed before it is concluded that it is entirely inappropriate [9,36]. The practice of polypharmacy indicates that the therapeutic training of medical practitioners is inadequate, there is a shortage of clinically appropriate drugs and medical practitioners are motivated by pharmaceutical companies, in terms of incentives, to prescribe more drugs [2].

The percentage of drugs prescribed by generic name was surprisingly low (1.5%), compared with WHO standards (100%). Our findings regarding the proportions of generic prescriptions from the study area are in contrast with some studies carried out across the globe [12,23,34,36-39]. But our results are consistent with those of studies conducted in India and other countries [3,9,14,40-44]. Moreover, the prevalence of prescribing drugs by generic name was higher than the corresponding figure for Bangladesh [21,45]. Several factors govern the choice of the prescriber when prescribe drugs by generic names. One is the tendency of prescribers to prefer brand-oriented prescribing because generic names are difficult to recall, whereas practitioners are easily reminded of brand names because of advertisements or medical representatives [3,9]. A concern among medical practitioners about the efficacy and overall quality of generic drugs in comparison with branded formulations may be another reason [23]. The WHO has emphasized that drugs should be prescribed by generic name with the intention of offering quality drugs at affordable cost to patients [3]. In contrast, Dutta and Chakraborty (2010) [12] have suggested that generic prescriptions will work only when a formulary approach to stocking is adopted and that they will not work in a private health care setting, besides compromising patient health.

The percentage of drugs prescribed from the EDL was 52.3%, which is lower than the WHO standard of 100% [5]. The reference of prescribers to the EDL was found to be minimal compared with the practices followed by prescribers from Egypt, Ethiopia, Nepal, Nigeria and Sri Lanka [2,11,16,22,28,36]. However, the rate of prescribing essential drugs was higher compared with the rates reported from other parts of India (33.5–46%) [3,5,47,48]. Sixty percent of the Indian population does not have access to essential medicines. The EDL is the list containing older, cheaper drugs of proven therapeutic value that are used to treat common conditions [23]. The WHO has encouraged adoption of the EDL so that appropriate drugs are

available at all times and at affordable cost. Thus, the compliance of prescribers with the EDL will result in rational drug prescribing patterns [3,23,36]. Since the adherence of prescribers to the EDL was found to be poor, a need to sensitize prescribers about this issue is suggested.

It is notable that antibiotics were prescribed in 45% of the encounters. This value is higher than limits recommended by the WHO (20–25.4%) and the ideal values (20–26.8%) derived from earlier studies [1,2,16,26]. The high prevalence of antibiotic prescriptions implies inappropriate use of antibiotics in the study setting [5]. The proportion of antibiotic prescriptions observed was low compared with the values reported previously [5,23,47]. Similar high values have been reported from Nepal (57%) [28], South Ethiopia (58.1%) and Sri Lanka (58%) [2,22]. Studies carried out previously on rural and urban health facilities in India have found an antibiotic prescription rate of 69.4% [5,49]. In contrast, the prevalence of antibiotic use internationally is lower than 20% [43,45,50]. The level of amoxicillin prescribing found in this study is almost the same as that reported by a study from South Ethiopia [2]. The antibiotic prescription pattern should meet the recommended criteria. Medical practitioners in rural settings prescribe antibiotics more frequently compared with those in urban settings [5,49]. Injudicious use of antibiotics may lead to severe antimicrobial resistance [5]. Therefore, it is suggested that antibiotics be used appropriately to prevent the emergence of drug-resistant microorganisms [16]. The present investigation was carried out in a rural area, and the high percentage of antibiotics prescriptions can be due to a variety of reasons. The antibiotics may be prescribed because of medical necessity, the immediate onset of antibiotic action, culture beliefs about antibiotics and limitations of practitioners with regard to correct diagnosis [2].

Overuse of injectables is the usual practice in many developing countries, and there is an urgent need to reduce the use of injections in such countries [23,37]. The WHO has suggested that the target for injection exposure be 10% or less [1,45]. In our study, the percentage of prescriptions with an injection was only 4.8%, which is acceptable according to the recommendations of the WHO and is better compared with the high values reported by several studies [11,16,21-23,36,37,48]. Ferreira et al. (2013) [50] reported the percentage of injection use in Brazil to be 2.5%, and Babalola et al. (2011) [38] reported the corresponding value in Nigeria to be 72.7%. The pattern of injection prescription was appropriate in the study area and may hence be encouraged. The less use of injectables is preferred which reduces the chances of virus transmission, sepsis, tissue toxicities, local irritation and reduces the cost of therapy [1,5,37].

The most prescribed drugs were those used for GIT manifestations, indicating a high incidence of GIT complications in the study area. The second most prescribed drugs were multivitamins, which might be due to their placebo effect on patients. The high frequency of prescription of GIT drugs, multivitamin preparations, analgesics/NSAIDs and antibiotics reflect the tendency of practitioners to provide symptomatic relief rather than therapeutic interventions [51]. The high level of prescription of vitamins and tonics leads to polypharmacy and increased cost of therapy [5,52]. Nutritional experts are of the opinion that there is no need of vitamin supplements if individuals are on balanced diets. Excess vitamins are excreted through the kidneys and just represent a burden on the urinary system [5]. Under- and over-use of antibiotics leads to problems in clinical practice. Therefore, it is suggested that they be used optimally [53].

The increasing cost of medicines is a major concern for developing countries such as India [54]. Therefore, it will be rational to prescribe drugs from the EDL and by generic name so that the cost of therapy is reduced. The present situation reflects the tendency of prescribers to prescribe branded drugs. In such situations, low cost brands should be prescribed by the prescriber or dispensed by the pharmacist to make the treatment affordable to the patient. In our study, most of the prescriptions cost between INR 100 and INR 200, indicating an inclination of prescribers towards cost-effective therapy.

A prescription is an outcome of a patient–doctor interaction that has an impact on a patient's health [55]. The essential components of a prescription are the identity of the recipient and the drug, formulation, dose, route, timing, frequency and duration of administration [19,55]. The findings about the quality of written prescriptions reveal that the legibility of the prescriptions was inadequate and that there are lacunae in the information. In most of the prescriptions, details about the patient demography, diagnosis, dose of drug, frequency of administration and duration of therapy were not mentioned clearly. Important pieces of information such as the date of consultation, patient's address and even doctor's signature were missing in most of the prescriptions. The compliance of the prescriptions with the standard prescribing guidelines was found to be minimal. All the demographic details of the patient were clearly mentioned in 64% of the prescriptions collected. The patient's name was mentioned in 100% of the prescriptions, which is in accordance with the earlier findings (97%) of Phalake et al. (2011) [56]. The full name of the patient was mentioned in 87.1% of the prescriptions. The patient's detailed address was mentioned in only 9.71% of the prescriptions, but this value is higher than that recorded in a previous Indian study [15]. The absence of the patient's address reflects a poor trend in prescription writing. The patient's address indicates the location to which the patient belongs and helps decision making about follow-up [56]. The busy schedule and heavy workload of medical practitioners may be the reason for the high rate of prescriptions without complete addresses [55].

The prescription is a medicolegal document that should contain details such as the doctor's name, address and contact number, registration number and qualifications, date of consultation and signature of the prescriber [55, 57]. In this study the presence of these essential components was found to be better compared with the findings of earlier studies conducted in India [15,56]. Mentioning the doctor's complete address and contact number is critical because it can save a patient's life in the case of an emergency. Failure to mention the qualifications of the practitioner raises questions about the practitioner's authority to prescribe medicines. Inadequate identification of prescribers is one of the most frequent problems in prescription writing [56]. Mentioning the date of prescription is desirable as it prevents the possibility of re-use of a prescription [23].

Legible prescriptions guide pharmacists and patients towards effective use of medicines, and medical practitioners are legally bound to write quality prescriptions. Additionally, the WHO has set down detailed guidelines for good prescribing practices [5,19]. The legibility or readability of a prescription is a significant factor that may affect the quality of the prescription [55,58]. Illegible prescriptions with inadequate details and poor handwriting cause misinterpretation of instructions by dispensers, which may lead to fatal consequences [19,21,56,59,60]. In our study, the overall legibility of prescriptions was assessed with respect to writing quality, extent of information on dose and clarity of instructions. The proportion of prescriptions found to be very clear and with no problem reading all aspects was 53.7%. Only 23.1% of the prescriptions required some effort for interpretation. Either one or more than one aspect was not clear in 17.7% and 5.4% of the prescriptions, respectively. This shows that a majority of the prescriptions were legible and understandable. A lower percentage of illegible prescriptions were found compared with earlier studies [61]. Similar studies from India have reported the prevalence of illegible prescriptions to be 17.6% [56] and 6.3% [44]. The clarity of

instructions was very good in 59.1% of the prescriptions, and 18.9% of the prescriptions required some effort to understand the instructions. The instructions for one or more medicines were not clear in 15.4% and 6.6% of the prescriptions, respectively. The strength and daily dose of a drug were mentioned either very clearly or required some effort to understand in 60% and 18.6% of the cases, respectively.

Conclusion

The prescription audit is an important measure in exploring the pattern of prescription writing in a particular study setting. This study revealed that prescribers did not follow the prescribing core indicators of the WHO closely and that they deviated from the standard prescription guidelines. However, the use of injections was within the recommended limits of the WHO, and this is too appreciated. There was evidence of polypharmacy, and the prevalence of prescribing drugs by generic name was low. Prescribers neglected prescribing drugs from the EDL, and the percentage of antibiotic prescriptions was high. The quality of prescriptions with respect to legibility and clarity was found to be suboptimal. This suggests awareness programmes are needed for prescribers. Interventional measures such as the use of printed or electronic prescriptions can improve the ease of interpreting information and reduce the chances of medication errors. Efforts should be made by the government and society to improve prescription practices and promote rational drug use.

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Conflict of Interest

The authors declare no conflict of interest.

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