

AWARENESS AMONG PHYSICIANS OF A TERTIARY CARE HOSPITAL REGARDING RATIONAL USE OF MEDICINE: A QUESTIONNAIRE-BASED STUDY

SHETTY YASHASHRI C¹, RAO RAJENDRA P, KOLI PARESH GIRDHARLAL¹, KULKARNI UJJWALA¹,
POOJA SG¹, REGE NIRMALA N¹

Department of Pharmacology and Therapeutics, Seth Gordhandas Sunderdas Medical College and King Edward Memorial Hospital,
Mumbai, Maharashtra, India. Email: prshkoli@gmail.com

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ABSTRACT

Objectives: The current study was planned with the objectives of discovering awareness regarding the rational use of medicines (RUM) among the physicians, drug prescribing patterns, and verifying the quality of the prescriptions given to the patients.

Methods: A pre-validated questionnaire was used for physicians and patients after the Institutional Ethics Committee's permission and consenting the participants. Prescriptions of patients were photocopied. The study was conducted in dermatology, medicine, and general outpatient departments. The study duration was from June 2013 to April 2014, and a universal sampling was used. The data were analyzed using descriptive statistics.

Results: 70/105 physicians consented. The score for knowledge was 10.36 ± 1.96 in this study. 73% were generic prescriptions. The score per physician for attitude and practice on the Likert scale was 67.47 ± 5.75 . Fifty-eight percent of physicians mentioned they prescribe on diagnosis, and first choice is preferred. 97% said fixed drug combinations are better for compliance. Of the 278, 385 patients consented. The average number of drugs prescribed per prescription was 3.545 ± 1.45 , and legible was 32.37%. Non-pharmacological therapy was mentioned in 11.87%, and 54% were complete in dose and duration. 40.64% of patients did not take the medications regularly, and 95.57% said the cost of medicines was the reason. 69% (120/174) purchased economical alternatives without informing the doctor.

Conclusion: The awareness regarding RUM in physicians is low; the cost of medicines deters patients from regularly taking medicines.

Keywords: Patient's adherence, Non-compliance, Cost, Prospective, Cross-sectional, Observational.

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INTRODUCTION

The rational use of medicines (RUM) requires that "Patients receive medications appropriate to their clinical needs, in doses that meet their requirements, for an adequate time, and at the lowest cost to them and their community" [1]. This concept stems from a World Health Organization (WHO) conference on the rational use of drugs held in Nairobi in 1985 [2], wherein irrational prescribing was considered a global problem. Twenty-nine years later, despite various strategies implemented to promote RUM, irrational and inappropriate drug use persists as a significant problem as pointed out by Mathew *et al.* in the study published in 2013 [3]. Despite various strategies implemented to promote RUM, irrational drug use remains a significant problem. To determine how existing medical practices and prescribing trends are at our institute, we planned a study to assess medicine use in our tertiary care hospital. Our study's objective was to determine physicians' awareness regarding the RUM. To support these data, we also wanted to determine the quality of prescriptions given by physicians regarding legibility, the layout of prescriptions, and WHO prescribing indicators.

As the affordability of patients is one component of the RUM, we tried to determine the physicians' awareness of pharmacoeconomics. To corroborate all these, we also planned to determine patient adherence to prescriptions and any reasons for non-adherence. Thus, the study's primary objective was to detect newly graduated physicians' awareness of the RUM and pharmacoeconomics. The secondary objectives were to determine the prescribing drug patterns of these physicians, verify the quality of the prescriptions given by treating physicians in terms of adequacy, legibility, and layout of prescriptions, and determine patients' adherence to the therapy and reasons for non-compliance.

METHODS

The study was conducted in a Tertiary care hospital in Mumbai. It was a prospective cross-sectional, observational, descriptive study. The Institutional Ethics Committee for Research on Human Subjects (Committee for Academic Research Ethics) of Tertiary care hospital was approved for the study (Ethics Committee no: EC/97/2012). Permission was also sought from the IEC to interact with the patients of the enrolled physicians (2-5 patients/physician) to photocopy their prescriptions and administer a questionnaire. The confidentiality of the data got from the questionnaires, and the prescriptions was maintained.

Newly graduated physicians practicing in dermatology, medicine, and at General Practitioner outpatient department (OPD) of a tertiary care public hospital were included in the study. Each physician's 2-5 patients were given a questionnaire, and their prescriptions were reviewed.

Physicians were enrolled in this study if they were newly graduated physicians (up to 5 years of graduation) practicing in either dermatology, medicine, or General OPD departments. Physicians with an MBBS degree but not likely to diagnose and treat psoriasis were excluded from the study.

For the enrollment of patients treated by the selected physician, the patients willing to give written consent to review their prescriptions and fill out the questionnaires independently were included in the study. Mentally challenged patients, patients admitted to the hospital, and those under 18 years of age were excluded from the study.

Data collection was done prospectively. Information was collected from dermatologists and physicians by administering a questionnaire.

To verify their prescription practices (prescribing pattern and quality of prescription), their prescriptions written for at least 2–5 patients were studied. In addition, the patients were also administered a questionnaire.

A questionnaire was used to record physicians' knowledge, attitude, and practice regarding the RUM and pharmacoconomics. It had domains that included knowledge (17 items), attitude, and practice (26 items). Twenty-one items related to attitude and practice were on the Likert scale. The questions were multiple choice questions, statements with 5 point Likert scale (1= never and 5= always), and case-based scenarios followed by questions. The questions tested knowledge about the essential drug list, a recent version of the WHO, and national essential drug list, approved fixed drug combinations (FDCs) listed in the WHO, and the Indian Essential Medicinal List (EML), the definition of RUM, 'p-drugs' concept. To find out the pattern of the prescriptions, questions related to the preference toward prescribing branded drugs or generic versions, old or new drugs, questions related to suitability, tolerability, efficacy, and price (STEP) criteria for prescribing a particular medicine, the source of drug information were asked. A case-based scenario was given to determine physicians' use of pharmacoconomics principles in their practice. This questionnaire was designed based on a literature search, and its content validation was done by expert opinions from subject experts and those from community medicine and social scientist. One descriptive question was asked related to the FDCs, where the content of FDCs was asked.

The patient questionnaire had 11 close-ended items in the form of statements about the legibility of the prescription (n=5), treatment satisfaction (n=1), instruction about the next visit (n=1), and the cost of the therapy (n=4). The questionnaire was also validated by the abovementioned group of experts.

Variables

Physicians' knowledge, attitude, practice

1. Percentage of physicians giving correct responses
2. Average score attained for knowledge-related items
3. Percentage of physicians following the practice as per statements given
4. Percentage of physicians who check the availability of drugs in the hospital pharmacy
5. Percentage of physicians who check the affordability of patients
6. Pharmacoconomics.

For prescription analysis

1. Average number of drugs prescribed to the patients
2. Percentage of drugs prescribed from the National Essential Drug List
3. Percentage of the drugs prescribed by generic name
4. Percentage of the drugs prescribed by brand name
5. Percentage of antibiotics prescribed
6. Percentage of injections prescribed
7. Percentage of legible prescriptions
8. Percentage of complete prescriptions for dose and duration
9. Percentage of prescriptions mentioning the number of medicines to be dispensed
10. Percentage of prescriptions mentioning non-pharmacological therapy (special instructions).

Patients' responses

1. Percentage of patients adhering to drug therapy
2. Reasons for non-compliance
3. Percentage of patients aware of cheaper alternatives to the prescribed drug
4. Percentage of patients purchasing economical alternatives without a physician's knowledge.

Study procedure

Written informed consent was obtained from the physicians, following which they administered the questionnaire. Written informed consent

was also obtained from the patients for whom the participating physicians had written a prescription. At least 2–5 patients' prescriptions per physician were photocopied and analyzed later. The patients were also administered a questionnaire. Responses of physicians and patients were analyzed.

It was decided to include all the newly graduated physicians practicing in the dermatology, medicine, and general practitioner OPD departments of the tertiary care hospital who are willing to participate. As the study was exploratory and as it was decided to include the entire population at the site, no sample size calculation was done.

The data were entered into the computer using Microsoft excel 2013. Then, using descriptive statistics, data were analyzed to measure WHO prescribing indicators [4,5]. First, prescribing indicators were presented as percentages per prescription. Next, the rest of the data were analyzed, and the results were expressed in terms of the mean \pm SD and percentages and presented using tables.

RESULTS

Participants were selected from June 2013 to April 2014 (11 months) in a Tertiary Care Public Hospital. Of the 105 physicians approached, 70 consented and gave written informed consent. The mean age was found to be 26.8 \pm 1.15 years. Male-to-female ratio was 2:1. The mean number of patients treated/day was 28.8 \pm 6.4 per physician.

Physicians' knowledge, attitude, and practice

None of the 70 physicians could answer all the questions related to knowledge correctly. The average score for knowledge-related items was 10.36 \pm 1.96 (out of 17). Although 96% claimed that they were aware of the terms "RUM" and "Essential drugs," only 3% could explain the meaning of "RUM" and 69% of "Essential drugs." The "p" drug concept was known to be 25.71%. 72.85% of physicians preferred prescribing generic drugs, and new drugs 34.28% of physicians. The sources of drug information were not selected correctly by 20% for low-cost medicine, 77.14% for rational fixed-dose drug combinations, and 48.57% for medicines banned in India. Only 51% mentioned that they refer to the National essential medicine list. Four questions related to STEP criteria for prescribing a particular medicine. The question of the STEP criterion for selecting doxycycline for renal failure patients was correctly answered by 51.42% (36 out of 70).

In comparison, the drug of choice in specialized conditions such as pregnancy was answered correctly by 64.29% (45 out of 70). The correct answer given to the rheumatoid arthritis case was 63%, whereas the subquestion related to the consideration of STEP criterion while selecting a drug for the above patient was answered correctly by 45.71% (32 out of 70). The question about the efficacious drug for typhoid fever was answered correctly by 50% (35 out of 70 physicians). The answer to the case base scenario, which was related to pharmacoconomics, was answered correctly by 68.57% (48/70) physicians, and of these, 33 gave appropriate reasoning for the same. 51 physicians did not attempt the question of the costly and more efficacious drug. This question was correctly answered by 12 with appropriate reasoning.

One descriptive question related to the fixed drug combinations was attempted by only 21.43% (15/70) of physicians, and 11.42% (8/70) of physicians had given examples of FDCs as per the WHO as well as the Indian EML.

The average score per physician for attitude and practice-related items on the Likert scale was 67.47 \pm 5.75 (out of 105 for 21 items). Thus, for each item on the Likert scale, the average score per physician was 3.21 \pm 0.27. Fifty-eight percent of physicians mentioned that they always prescribe based on diagnosis, 65.71% of physicians said that most of the time, they prescribe essential medicine, and 72.82% said they prescribe the drug of first choice, as mentioned in the textbooks. Still, only 8.57% of physicians were found to check the availability of drugs in the hospital pharmacy regularly, whereas 14.28% of physicians

checked the affordability of patients. 97% felt FDCs were better in compliance compared to single drugs. 27% felt that the FDCs were inferior in effectiveness, and 57% felt they were rarely better than a single drug in adverse drug reactions (Table 1).

PRESCRIPTION ANALYSIS

Of the 385 patients, 278 consented; therefore, the total number of prescriptions analyzed was 278. The average number of drugs prescribed per prescription was 3.545 ± 1.45 . The drugs prescribed by generic name were 43.18% (424/982). The percentage of antibiotics prescribed per prescription was 20.57% (202/982), and injections were 0.61% (6/982). The percentage of legible prescriptions was 32.37%. 53.59% (149/278) of prescriptions were complete for dose and duration. It was found that the dose was mentioned only in 53.59% of prescriptions (149 out of 278), and legible writing to read the dose was in 92.61% (138/149). Unit of the dose was mentioned in 19% (53 of 278) and legible in 81.13% (43/53). The duration was mentioned in 83.81% (233 of 278), but legible was in 83.69% (195/233). The number of medicines to be dispensed was mentioned only in 1.79% (5 of 278). Non-pharmacological therapy was mentioned only in 11.87% (33 of 278), and the prescriber's signature was present only in 75.53% (210 out of 278). The percentage of prescriptions mentioning non-pharmacological therapy (special instructions) was 11.87 (n=33).

Patient responses

While answering the questionnaire, 40.64% of patients admitted not regularly taking prescribed medications. When asked the reasons for the same, 95.57% of them mentioned that the cost of the medicines is the main factor. Other reasons were the non-availability of the time to consume the medicines (3.53%) and the inconvenience of carrying medicines (0.88%).

The patients (62.58%; 174/278) informed that they were aware of cheaper alternatives to the prescribed drug. Of these patients, 31.03% (54/174) said they still preferred taking costly medicines prescribed by the physician, but 68.96% (120/174) said they purchased economical alternatives without informing the prescribing doctor. Only 43.1% of patients understood the dose the prescribed medications should be consumed.

DISCUSSION

Rational prescribing involves not only selecting the right drug in a ready-to-use manner but also writing a prescription legible manner and communicating the same to the patient [6]. Rational prescribing is a skill that should be taught in the formative years before irrational prescribing becomes a habit. Hence, it was interesting to find out the awareness among newly graduated physicians regarding the RUM and pharmacoconomics. Therefore, it was decided to select those working in the department of Dermatology, medicine, and General OPD of tertiary care hospitals.

The study was mainly a questionnaire-based survey, but it was decided to verify the responses by observing the prescribing pattern of these physicians. Hence, the prescriptions of the patients prescribed by them were also studied. The quality of their prescriptions was also determined.

While checking the awareness toward the RUM and pharmacoconomics, two types of questions were asked: one related to knowledge, and the other related to attitude and practice.

The results showed that the physicians' knowledge score was 10.36 ± 1.96 , almost 61% of the total score. However, though they did not know the correct answers, they were familiar with specific terminologies based on their undergraduate knowledge. None of the physicians was found to practice rational prescribing regularly or could have an optimal attitude toward such practice. The average response on the Likert scale was between 3 and 4. This showed that they needed some motivation to practice rational prescribing. In our setup, regular programs for the RUM are scarce. Even if they are held, physicians usually cannot attend because of their busy practice. Therefore, it is necessary to hold such CMEs either at the department or the institution level so that the practice of rational prescribing can be followed.

Physicians also committed that they rarely enquire about the availability of medicines in the hospital pharmacy or check patient affordability of the prescribed drugs. Only half of them referred to the national essential medicine list. Non-adherence to this list and of EDL for hospitals must have led to prescribing of multiple expensive drugs. Such prescribing practice can lead to non-compliance, drug resistance, treatment failure, and unnecessary disease burden on the patients [7]. Similarly, the drugs from the EDL should be made available in hospital pharmacies.

The prescription analysis using prescribing indicators set by the WHO indicated the inadequacies in prescriptions. The findings were consistent with our findings of Study 1 and with similar studies conducted in India by Mathew *et al.* [3], Karande *et al.* [7], Hazra *et al.* [8], Rishi *et al.* [9], and Vijayakumar *et al.* [10]. This indicates again a need for an educational intervention. However, the present study's essential features were missing doses units, non-legibility of prescription, and missing physicians' signatures. A prescription is a legal document, and such a casual attitude while writing prescriptions is unacceptable.

An average number of drugs per encounter is an essential index of RUM in prescribing practices. It was also found from the patients' responses that the non-compliance stems from such poly therapy. The cost was the primary reason for non-compliance (95.57%). Availability of time to consume drugs and the hassle of carrying medicines were other things. The study setting was a public hospital, where drugs are provided to the patients free of cost, despite that, most patients expressed cost as the major factor. This is because the drugs are not always available in the hospital pharmacy. In the study done in our institute, it has been

Table 1: Findings related to prescribing practice and reasons for preference to fixeddose combinations

Attitude and practice	Always (%)	Most of the time (%)	Sometime (%)	Rarely (%)	Never
How often do you prescribe					
i. An essential medicine	21 (30)	46 (65.71)	2 (2.8)	1 (1.4)	0
ii. Based on the diagnosis	40 (58.82)	26 (38.2)	2 (2.94)	0	0
iii. The drug of the first choice mentioned in the textbook	2 (2.8)	51 (72.82)	17 (24.9)	0	0
iv. Availability in your institution/nearby chemist	6 (8.57)	39 (55.71)	25 (35.72)	0	0
v. Affordability by the patient	10 (14.28)	50 (71.42)	10 (14.28)	0	0
	Strongly agree (%)	Agree (%)	Neither agree nor disagree (%)	Disagree (%)	Strongly disagree (%)
Do you feel FDC is better than a single drug in terms of					
i. Compliance	35 (50)	33 (47.14)	1 (1.42)	1 (1.42)	0
ii. Effectiveness	2 (2.85)	28 (40)	21 (30)	18 (25.71)	1 (1.42)
iii. ADR	2 (2.85)	8 (11.43)	20 (28.57)	34 (48.57)	6 (8.57)

FDC: Fixed drug combinations

detected for checking the prescriptions for patients with psoriasis. In addition, many physicians prescribed branded medicines against the hospital's policy. In India, only 437,457 persons are medically insured; most are spending out-of-pocket [11]. It has been shown that medical cost has led to an economic burden on many families. As 70% of our population is below the poverty line, financial considerations should be at the core while prescribing drugs to the Indian population.

Another issue that stemmed from this was few patients (62.58%) were aware of cheaper alternatives to the prescribed drug, and nearly (68.96%) purchased economical alternatives without informing the prescribing doctor. This amounts to self-medication, which has hazardous implications [12]. In addition, poor legibility in terms of dose and unit of dose in the prescription has led to a lack of understanding by the patient regarding what dose of medication has to be consumed. This can lead to treatment failure or an overdose of the medication [13]. In 2014, prescription guidelines mentioned prescription drugs must be written in capital to avoid consequences [14].

This study has highlighted poor knowledge and awareness about RUM as reflected in the practice of young physicians. The glaring deficiencies were irrational prescribing habits without checking the availability and affordability of patients, lack of knowledge regarding choices for drug information sources, and incomplete, inadequate, illegible prescriptions. This has resulted in non-adherence to prescriptions by patients. This study suggests that prescribing skill training program is needed to enhance the prescribing competency of newly graduated doctors. Perhaps the sensitization toward RUM should be started in the early years of medical education. A system to assess their prescribing competency before permitting them to practice should be developed at the University of Medical Council of India level. Poor knowledge and awareness about RUM has reflected in the practice of young physicians, as seen in the present study.

It was a cross-sectional design, so often, the change in the perception of patients cannot be taped. The participants who did not consent to participate or were misdiagnosed may have different opinions. The data cannot be generalized to private or corporate hospitals.

CONCLUSION

The awareness regarding RUM in physicians is low; the cost of medicines deters patients from regularly taking medicines.

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AUTHORS CONTRIBUTION

Authors Shetty, Rao, Kulkarni, and Rege were involved in study planning and protocol writing. Authors Rao, Koli, Kulkarni, and SG Pooja were

involved in the data collection, entry, and analysis. Authors Shetty, Koli, Kulkarni, and Rege were involved in manuscript writing.

CONFLICTS OF INTERESTS

No author has any conflict of interest.

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