Research Article

Assessment of patients' understanding of the use of dispensed medications at a tertiary care hospital of central Gujarat

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ABSTRACT

Background: Medications are an important part of the treatment of patients by clinicians in addition to other measures to be followed by the patients during the entire period of treatment. **Objective:** To assess patients' understanding about the use of medications after medicines are dispensed to them by a pharmacist at a tertiary care hospital of Vadodara district in Gujarat. **Materials and Methods:** It was a descriptive cross-sectional study conducted between the time periods of January 2015 and August 2015. A total of 464 patients were interviewed after they had received medications from the pharmacy window. Descriptive statistics were used for summarizing data. **Results:** Majority of the interviewed subjects belonged to 25–44 years age group with almost equal representation from both gender and new as well as follow-up visit patients. The patients were prescribed on average of 4.14 medicines (standard deviation 2.10). Only 62 participants (13.4%) had a correct understanding about the use of medication in terms of purpose (20.9%), quantity (86.4%), and frequency in a day (73.1%), and relation of its consumption with food (37.2%). The majority (71.2%) took only one attempt by the investigator for a complete understanding of drug dosages after explanation. **Conclusion:** The understanding of patients about dispensed medications was low, the lowest being the purpose of medication.

KEY WORDS: Understanding Medications; Pharmacist; Drug Dosages

INTRODUCTION

The focus on health-care delivery continues to shift from inpatient care of patients to managing them on an outpatient basis. In this scenario, the practice of quality control over medication use is becoming more the responsibility of the patient and less the responsibility of the provider. Previous studies have found that many patients are not receiving oral or written instructions from their physicians and pharmacists on how to appropriately deal with prescription medications.[1]

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The research has established, and it is well accepted that an adequate level of knowledge regarding prescribed medications is associated with an increased level of compliance with drug therapy; consequently, failure to comply with medication instructions commonly leads to serious adverse outcomes.[2] The institute of medicine[3] estimates that 90 million adults in the United States may have trouble understanding and act on health information. In providing drug information, pharmacists less often discuss how the medication should be taken. It is also important to provide information to patients when to take their medications in relation to food intake.[4]

Currently, there is no system for verifying the understanding of medications after providing prescription by the clinician and dispensing of the prescribed medications by the pharmacist. The matter whether the patient has understood the instructions for medication use and can manage the medications independently at home remains unsolved. The

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present study focuses on how well the patients were informed in managing the dispensed medications by the pharmacists at outdoor patient Department of Sir Sayajirao Gaikwad (SSG) Hospital which is a tertiary care hospital attached with medical college in central Gujarat of India.

MATERIALS AND METHODS

It was a descriptive cross-sectional study with data collection period from January to August 2015. From previous studies by Davis *et al*.[1] 51.6% of patients revealed errors in medication dosages, we assumed 50% of the patients understand the medication ingestion schedule. Taking this into consideration, $P = 50\%$, $q = 50\%$, and power = 90%, we calculated the sample size of 384 (at 95% confidence level $z = 1.96$), assuming 20% non-response rate the sample size came to 460 patients for enrolment in the study.

Sampling Procedure

We collected the previous year outpatient department (OPD) data from Hospital Management Information System and calculated the proportionate contribution of each clinical department to the total flow of patients in the outdoor department. Accordingly, the number of subjects from each department to be enrolled was counted in that proportion to get a representation of major departments. Thus, the impact of total OPD. attendance was minimized. The departments contributing <5% of patient load were excluded from the sampling.

The patients were selected randomly (lottery method) for an interview. We selected one number from the box, taking into consideration the total number of patients standing in a queue and that selected patient was interviewed after their consultation with a pharmacist. As soon as, we finished the interview with one patient, the next random number was selected, and the procedure was repeated.

Inclusion Criteria

The following criteria were included in the study:
- Outdoor patients attending various OPDs and pharmacy OPD
- The patient or his caretaker who had collected medicines from the pharmacy window.

Exclusion Criteria

The following criteria were excluded from the study:
- Those patients who are not willing to participate in the study
- The patients were not asked about the IV, IM medications.

Data Collection

The patients were approached after medications were dispensed to them from pharmacy window. They were explained about the nature of the study and asked to participate in the study. After taking informed verbal consent, the patient or caretaker of him in exceptional cases was administered a pretested semi-structured questionnaire to assess and check their understanding about drug ingestion. They were asked about the
- Purpose of medication for which it was prescribed by the clinician
- Dosages – number of tablets or quantity of medication in respect to the liquid formulations
- Frequency – number of times the medicine to be taken in a day
- Relation with the food – whether it is to be taken on an empty stomach or after having meals.

We obeyed the principle of "study with service." Patients were asked to repeat dosages of all prescribed medicines. If any mistake found it was corrected after the interview, and the process was repeated until the participant explained correct dosages of all dispensed medicines.

Data Management

The data entry was done in Microsoft Excel sheet and analyzed using Epi. Info™ 7.0.8.0 software.[5] The proportion of variables was used for calculating the frequency of various variables and Chi-square test for checking their statistical difference. The data entry file and folder were kept password protected.

The patients' responses were tested for four components of medication use, namely the purpose, its dose, its frequency, and relation with food. One hundred points were given for correct response to each of these four components and 0 points for a wrong response or not knowing that component. Average was calculated from the score of these four components for each prescribed medicine, thereafter the score of all medicines was averaged out to calculate the overall correct understanding score of each patient. The patients were described as having correct knowledge for medication use if the final score comes to 100.

Ethical Clearance

Approval of Ethical committee (Institutional Ethics Committee for Human Research, Medical College Baroda and SSG Hospital) was taken before starting the study. The permission was also taken from superintendent of SSG Hospital, Vadodara before the initiation of data collection.

RESULTS

As per methodology, 464 patients were included from outdoor departments of various clinical branches at SSG Hospital to get a representative sample of all patients attending the hospital for various health problems [Table 1].

There was almost an equal number of new and old cases. Among them, 73.5% were patients themselves, while 26.5% were caretakers of patients. The majority (46.6%) were belonged to 25–44 years age group, followed by 45–54 years of age group. Senior citizens were almost 10% of the study subjects [Table 2]. Mean age was 40.70 with standard deviation (SD) of 15.05.

Apparently, there were more female participants in the study as the study participants from obstetrics and gynecology department were exclusively females, and mothers were the usual companion of children from pediatrics and other clinical departments. Majority of subjects fell in the category of primary level education (32.5%), while illiterate people constituted 19% of study participants [Table 2].

Table 1: Distribution of patients according to the clinical departments (*n*=464)

Specialty	Calculated sample size	Interviewed (%)
Skin and Venereal diseases	71	71 (15.3)
Orthopedics	68	69 (14.9)
Surgical	34	38 (8.2)
Obstetrics-Gynecology	49	49 (10.6)
Ophthalmology	23	23 (5)
Pediatrics	39	39 (8.4)
ENT	36	36 (7.8)
Medicine	139	139 (30)
Total	460	464 (100)

Table 2: Profile of interviewed subjects (*n*=464)

Characteristics	No. of Subjects (%)
Patient status	
New case	233 (50.2)
Follow-up or old case	231 (49.8)
Type of subjects	
Patient	341 (73.5)
Caretaker	123 (26.5)
Age distribution (years)	
15–24	63 (13.6)
25–34	127 (27.4)
35–44	89 (19.2)
45–54	83 (17.9)
55–64	62 (13.4)
65 and above	40 (8.6)
Gender distribution	
Male	215 (46.3)
Female	249 (53.7)
Educational Status	
Illiterate	88 (19)
Primary	151 (32.5)
Secondary	148 (31.9)
Higher secondary	48 (10.3)
Graduate and above	29 (6.3)
Total	464 (100)

Majority of participants (85%) were not able to read the prescribed medication details from the case record sheet. Only 4% of participants were able to read as well as understand the prescription details in the case sheet [Figure 1].

The majority was prescribed 15 days of medication (36.9%). More than 20% of subjects were not aware of the duration of dispensed medications.

Almost 19% were prescribed more than 5 medications by the clinician. The average number of medicines prescribed to the patient was 4.14 (SD 2.10). The patients from medicine OPD were prescribed more number of medicines (Mean 5.83, SD 2.17).

As per Table 3, pharmacists spent <3 min for explaining medication to the patient or caretaker in the majority of subjects. This included searching for medication, giving it to the patient and explanation for its use.

When the analysis was performed using all four components (purpose, quantity, frequency, and relation with food), only 62 participants (13.4%) had a correct understanding regarding the use of medication [Figure 2]. On selecting only two

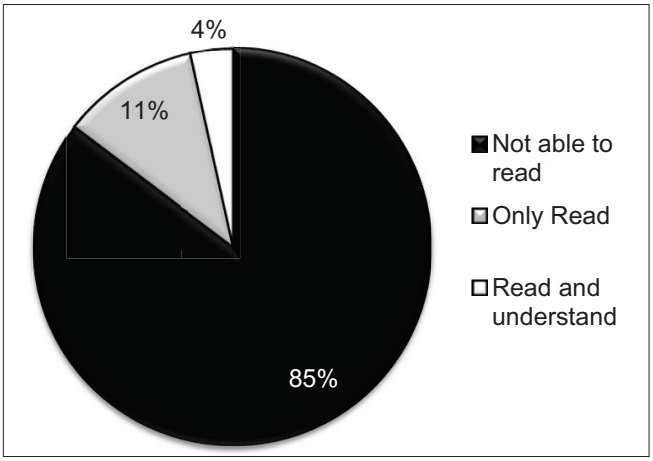

Figure 1: Ability to read and understand the written prescription (*n* = 464)

Table 3: Average time spent by the pharmacist for an explanation of medication to the patient/caretaker

Average time (min)	Frequency (%)
<1	28 (6)
1–2	368 (79.3)
3–4	44 (9.4)
5 and more	24 (5.1)
Total	464 (100)

components, namely quantity and frequency of medication, the score of correct understanding increased to 67%.

The study participants had good knowledge of the quantity of medication to be taken at a time (86.4%) and its frequency during a day (73.1%), but they did not know about the purpose of medication (20.9%) and its relation to meals (37.2%) [Figure 3].

Apparently, the correct score was more among people aged <40 years of age, females and people having more than primary education, but it was not statistically significant [Table 4].

There was an inverse relationship between number of prescribed medication and level of correct understanding for medications. As the number of medicines increase, the patient or caretaker gets confused between them and finds difficulty in correctly demonstrating the use of medications. This relationship was maintained even when the analysis was performed using only two components [Figure 4].

Among the subjects who could not explain correctly (86.6%), majority of them (71.2%) took only one trial for a complete understanding of drug dosages and 25.6% understood by the second trial [Figure 5].

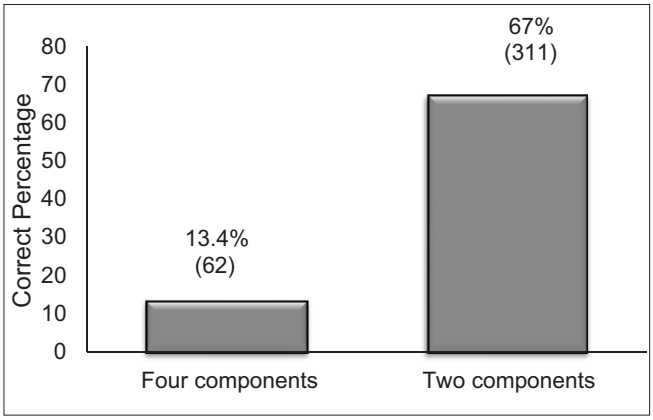

Figure 2: Correct understanding score for medications (n = 464)

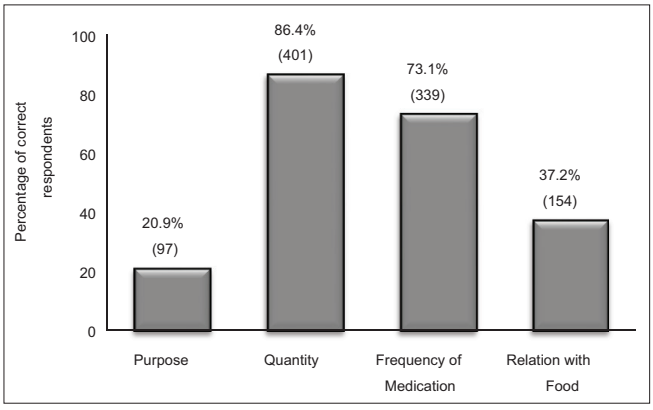

Figure 3: Correct respondents for each component (n = 464)

Table 4: Factors affecting correct understanding of prescribed medications (n=464)

Variable	Correct knowledge *n* (%)	Chi-square (*P* value)
Type of Patient		
New (First Visit)	34 (14.6)	0.417 (0.5184)
Old (Follow-up)	28 (12.1)	
Type of participant		
Patient	45 (13.2)	0.0004 (0.9841)
Caretaker	17 (13.8)	
Age		
<40 years	40 (15.2)	1.440 (0.2302)
More than 40 years	22 (10.9)	
Sex		
Male	23 (10.7)	2.047 (0.1525)
Female	39 (15.7)	
Education		
Up to primary level	26 (10.9)	2.202 (0.1378)
More than primary level	36 (16)	

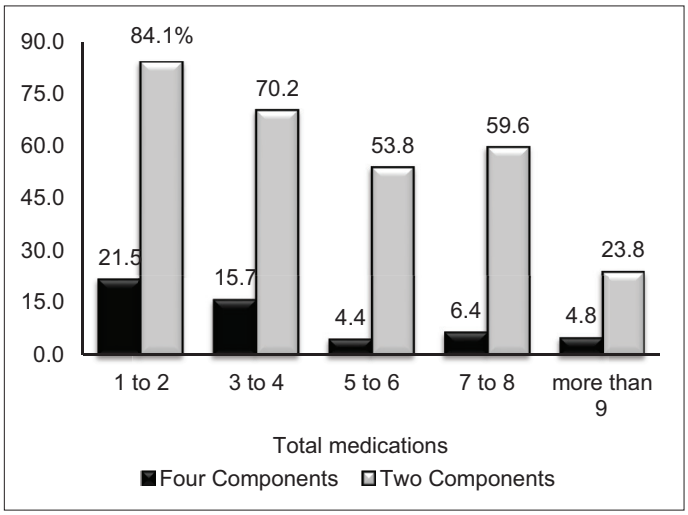

Figure 4: Relation with the number of prescribed medication and correct understanding of medications

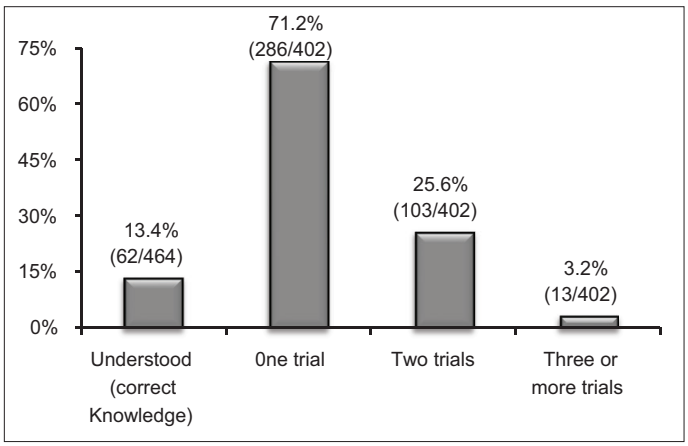

Figure 5: Trials taken by patients for a complete understanding of drug prescription

DISCUSSION

It was observed that caretakers are not much conversant and attentive to medication instructions while collecting it from a pharmacist. Patients often quoted that they have learned the use of medicines by trial and error. In this study, the majority of subjects fall in the category of primary level education, while illiterate people constituted 19% of study participants. These people were not able to read and understand the written prescription details in the case sheet. They solely depend on their recall memory to remember the dosages of medications explained by the pharmacist. Only 20.9% of participants had a fair knowledge of the purpose of prescribed medication. Only 37.2% of participants had correct knowledge of medicines ingestion schedule in relation to food. More than 95% of patients were not explained about the adverse effects of medicines by clinicians. The mean number of prescribed medication was 4.14 (SD 2.10) in this study. Majority of the participants (patients or caretakers) took only one trial by an investigator for correctly demonstrating the dispensed medications. Thus, cross-checking only once can help them to avoid misunderstanding about the prescribed medicines.

A study by Davis *et al*. found that 46.3% were unable to read and correctly state one or more of the label instructions on five common prescriptions. Rates of misunderstanding were higher among patients with marginal and low literacy, yet 37.7% of patients with adequate literacy skills misunderstood at least one of the label instructions.[1] In a study by Tarn *et al*. physicians stated the specific medication name for 74% of new prescriptions and explained the purpose of the medication for 87%. Physicians explicitly instructed 55% of patients about the number of tablets to take and explained the frequency or timing of dosing 58% of the time in that study.[6] The food may delay or decrease the absorption of that drug. On the other hand, some medicines are easier to tolerate when taken with food. It is always advised to ask the doctor or pharmacist whether its good to ingest the medicine with a snack or a meal or whether it should be taken on an empty stomach.[7] A 28-year-old female patient attending surgical OPD. stated, *"hu to jyare maafak aave tyare dava lau chhu; kyarek jamya pahela to kyarek jamya pachhi"* (I take medicines according to my convenience. Sometimes I take it before meals and sometimes after meals).

Look-alike/sound-alike medication names can result in medication errors. Misreading medication names that look similar is a common mistake. The Joint Commission publishes a list of look-alike/sound-alike drugs that are considered the most problematic medication names across settings.[8] A recent study was done by Ziegler *et al*. to investigate how much information about adverse effects patients want. In this study, they found that 76.2% of 2500 respondents wanted full disclosure of all possible adverse effects.[9] Phillips *et al*.[10] found that most of the common types of errors resulting in patient death involved the wrong dose (40.9%), wrong drug (16%), and wrong route of administration (9.5%). The causes of these deaths were categorized as oral and written miscommunication, name confusion (e.g., names that look or sound alike), similar or misleading container labeling, and inappropriate packaging or device design.[8,10] 13.6% of patients in the present study had not understood the dosage of medicines and 26.9% had misunderstood the frequency of medication.

Makaryus and Friedman found that only 28% of the patients were able to list all their medications (mean number of medications was 3.89 per patient).[11] One patient quoted, *"Ek j to dava chhe, aema su samajava jevu chhe"* (I am prescribed and supplied only one medicine, so there is nothing to get confusion). Thus, avoidance of unnecessary medication can help patients to concentrate on medications which are absolutely necessary for them. In a recent study by Benner *et al*.,[12] adherence rates decreased to 41%, 35%, and 30% in patients who received 0, 1, and 2 previous medications, respectively, among patients with 10 or more previous medications, adherence was 20%. A study by Davis *et al*.[1] found that taking a greater number of prescription medications was also statistically significantly associated with misunderstanding (adjusted relative risk, 2.98 [confidence intervals, 1.40–6.34] for five medications). Brown and Bussell suggested using the teach-back approach (i.e., asking patients to repeat the important points) and asking patients to read and interpret the medication label are ways in which the physician can confirm that patients understand all aspects of their new medication, which, in turn, increases adherence.[13]

The patient's knowledge of prescribed medications was based on memory and may not reflect the ability to use medications in the home setting. Patients' actual drug-taking behaviors were not observed, so a link between misunderstanding and medication errors cannot be demonstrated. Real conversation between the patient and pharmacist/clinician was not observed, so whether the instruction was not provided, or the patient or his caretaker does not remember it cannot be ascertained.

Recommendations

The patients need to be educated about the correct use of medications by pharmacists and clinicians; responsibilities of both them needs to be specified for explaining medications to the patients. The staff nurses and social workers can be trained for educating patients and their caretakers about the use of medications. Cross checking to assess the understanding of patients for dispensed medications may help. More studies are recommended to check the effectiveness of stickers or written information in the local language to improve patients' understanding of prescribed medications.

CONCLUSION

The present study concludes that correct understanding of medicinal use was only 13.4% for purpose, quantity, its frequency in a day, and relationships with food. Patients or their caretakers had good knowledge for the quantity of medication and its frequency in a day, but not much aware about the purpose of dispensed medicines. As the number of prescribed medications increase, patient or caretaker got confused. Majority of the study participants took only one trial for a complete understanding of drug dosages.

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