

A Community Based Study to Assess the Consequences of Drug Related Problems in Patients with Chronic Diseases in Dakishina Kannada

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Abstract: The presence of DRPs in patients with chronic illnesses is more common due to the longer duration of therapy as well as altered physiology in such patients. They are subjected to take more than one medication including over the counter medication who are more prone to have more DRPs⁸. Especially in a community setting there will be lack of information as well as documentation. So, awareness regarding these DRPs may help to identify, resolve, and prevent potential DRPs and is a prerequisite for better patient care⁴. Drug Related Problems (DRPs) may lead to increased health care cost, morbidity, mortality and decreased quality of life². So, a community based observational study was conducted in different places of Dakshina Kannada district to identify and assess the various drug related problems using Hepler - Strand classification for duration of 6 months from October 2019 to March 2020 by enrolment of 150 patients diagnosed with any chronic disease. Patients diagnosed with psychiatric illnesses, patients aged below 18 years old, pregnant and lactating women were excluded from the study. Medical information was collected using structured patient interview form and data were analysed and interpreted using Microsoft Excel 2010. From this study, it was found that the prevalence of patients identified for the presence of DRPs was 54.67%. The consequences of the drug related problems were found to be hospitalization, poor clinical response, reduced patient compliance and worsening of patient condition. Thus, the study concluded that pharmacist interventions play a major role in identifying and assessing the consequences of DRPs.

Keywords: Drug Related Problem, Chronic diseases, Community setting, Prevalence.

1. Introduction

A drug-related problem (DRP) is defined as an incident or circumstance that really or potentially interferes with desired health outcomes¹. DRPs can cause ineffective pharmacotherapy and will be accountable for drug-related morbidity and mortality². The term DRP includes medication errors (MEs), adverse drug events (ADEs), adverse drug reactions (ADRs) and other such events. Medication errors and adverse drug reactions (ADRs) are said to be the foremost

common kind of DRPs. Occurrence of DRPs during hospitalizations are reflected by longer duration of hospital stays, multiple therapies and cause increased health-care costs., thereby increasing the economic burden³. Awareness regarding these DRPs may help to spot, resolve, and prevent potential DRPs and is a prerequisite for better patient care⁴. A study on statistical analysis of medication error conducted in the inpatient setting of the general hospitals in Delhi shows that 88 out of the 1063 prescriptions resulted in ADEs, representing 8.2%. This shows that approximately 82 are likely to end in ADEs out of each 1000 prescriptions within the inpatients of OPD setting of general hospitals and Clinics in Delhi. These records imply that the occurrence of medication errors is very high [9]. In this observational study Hepler and Strand classification of drug related problems are getting used to classify DRPs.

However, there is a relative lack of information and inadequate documentation about Drug Related Problems (DRPs) in the community setting. In contrast to inpatients, outpatients are liable for both acquiring and administering their own medications and the process is far less controlled than the process in an inpatient setting⁶. Therefore, appropriate selection of treatment and better prescribing patterns should be established, which ensure effective benefits to the patients and minimizing the DRPs. DRPs can occur at all steps of the treatment process, mainly during prescribing, transcribing, dispensing and drug use by the patient⁵. These problems not only affect the therapy outcomes of the patient but also decrease the probability of achieving the desired therapeutic goals.

2. Objective

Aim: Assessment of consequences of Drug Related Problems (DRPs) in patients with chronic diseases in Dakshina Kannada district through a community-based study.

General objectives: To ascertain the consequences of drug

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Table 1

DRPS	Description
Untreated Indication	The patient features a medical indication that calls for drug therapy but is not receiving a drug for the same.
Improper Drug Selection	The patient has an indication for a selected drug but is taking the wrong drug for it.
Sub therapeutic Dosage	The patient features a medical condition that is being treated with the correct drug but with too little of it.
Failure to Receive Drugs	The patient encompasses a condition by virtue of his or her not receiving a drug for pharmaceutical, psychological, sociological or economic reasons.
Over dosage	The patient includes a medical problem that is being treated with the correct drug but with too much of it (may lead to toxicity).
Adverse Drug Reactions	The patient experiences a medical problem due to an Adverse Drug Reaction or adverse effect.
Drug Interactions	The patient incorporates a medical problem that caused by a drug-drug, drug-food or drug-laboratory interaction.
Drug Use Without Indication	The patient is taking a drug for no valid indication.

Table 2

Demographics and clinical features of patients participated in the study

Variable	Category	Frequency, N=150	Percentage
Age	< 40 years old	19	12.67%
	40 ≤ x < 60 years old	57	38.0%
	≥ 60 years old	74	49.33%
Gender	Male	73	48.67%
	Female	77	51.33%
Social habits	Alcoholic	18	12.0%
	Smoking	16	10.67%
	Both	9	6.0%
	None	107	71.33%
Number of chronic diseases	1	61	40.67%
	2	41	27.33%
	≥ 3	48	32.0%
Number of drugs prescribed	1-4	99	66.0%
	≥5	51	34.0%

Table 3

Distribution of DRPs among study population using Hepler-Strand classification

Types of DRPs	Frequency N=121	Percentage
Untreated Indication	7	5.78%
Improper Drug Selection	6	4.96%
Sub therapeutic Dosage	3	2.48%
Failure to Receive Drugs	11	9.09%
Over dosage	5	4.13%
Adverse Drug Reactions	57	47.11%

Table 4

Consequences of DRPS

Consequences of DRPs	Frequency, N=121
Hospitalization	16 (13.22%)
Primary care visit	26(21.49%)
Poor clinical response	12 (9.92%)
Reduced patient compliance	13 (10.74%)
No major influence	35(28.92%)
Unknown	16 (13.22%)
Worsening of patient condition	3 (2.41%)

related problems in patients with chronic diseases.

3. Methodology

- *Study site:* A community based observational study was carried out in different places of Dakshina Kannada district.
- *Study design:* A community based observational study
- *Study period:* The study was conducted for duration of 6 months from October 2019 to March 2020
- *Study sample size:* 150 Patients
- *Ethical clearance:* The study protocol was approved

by the Institutional Ethics Committee (IEC) of Srinivas Institute of Medical Science and Research Centre (SIMS&RC), Mukka, Mangaluru.

1) Inclusion criteria

- Patients aged 18 years and above.
- Patients diagnosed with any chronic diseases.
- Patients who are willing to participate in the study.
- Patients who are not pregnant or lactating.

2) Exclusion criteria

- Patients aged below 18 years.
- Patients diagnosed with acute illnesses

- Patients with psychiatric illnesses.
- Pregnant and lactating women.
- Patients who are not willing to participate in the study

Data source: Medical information provided by the patients

Materials used: Patient interview form

4. Result

We conducted an observational study in parts of Dakshina Kannada for a study period of 6 months. Here we used a specially designed patient interview form to collect the data from the patients who were eligible for the study (patients above the age of 18 years, patients having chronic illness, patients who are not pregnant and lactating). The data was collected from the homes of patients via interview and entered in the patient interview forms and was analysed by the use of Microsoft Excel 2010. A total of 150 patients diagnosed with chronic diseases were enrolled in the study. Out of 150 patients, 73 were male and 77 were female. Out of this, 74 patients belong to geriatric category and 76 were in non-geriatric category. The demographic features and characteristics of the patient participated in the study is given below Table no.2. Among the 150 patients who participated in the study, 18 were alcoholic, 16 were smokers and 9 were both alcoholic and smokers. 48 patients who participated in this study had more than 3 co-morbidities and 51 patients were prescribed with more than 4 drugs.

The chronic diseases included in this study were categorized as cardiovascular diseases, endocrine disorders, respiratory disorders, kidney disorders, neurological disorders, blood disorders, hepatic disorders and others. Hypertension, diabetes mellitus and their co-morbidities were the most commonly observed chronic diseases. Several factors such as female gender (63.63%), age above 60 years (60.81%), poly pharmacy (62.74%) and multiple co-morbidities (62.5%) were found to be associated with increased number of DRPs.

Out of 150 patients, 82 patients were found to have DRPs. Among them, a total of 121 DRPs were identified. The occurrence of DRPs in chronic diseases may lead to hospitalization, poor clinical response, reduced patient compliance and worsening of patient condition. The consequences of DRPs found in this study are given in table no. 04 below.

5. Discussion

Patients having multiple chronic conditions are mainly vulnerable to a sense of burden with their treatment regimen in order to maintain health along with their long term treatment⁷. However, there is a relative lack of information and inadequate documentation about Drug Related Problems (DRPs) in the community setting. In case of inpatients proper monitoring of patients is done; proper administration of medication, monitoring of serum electrolytes, monitoring for adverse drug reactions etc. Throughout the process of hospitalization health care providers, pharmacist and other related staffs are directly or indirectly involved in the management of patients. Outpatients are responsible for both acquiring and

administering their own medications and the process is much less controlled than the process in an inpatient setting⁶. There is a lack of monitoring as well as maintenance of related data. So, an observational study was conducted to identify and assess various drug related problems found in community by using Hepler-Strand classification. In the present study, 150 patients diagnosed with one or more chronic diseases have participated. Among them, 82(54.67%) patients are identified with 121 DRPs. Many of the DRPs had no particular influence on the patients. However, a significant no. of patients had to visit the primary care center (21.49%) and some even had to be hospitalized (13.22%). This is a lower percentage when compared to the study carried out by Adepu *et al.*, where 46% had primary care visits and 31% were hospitalized due to DRPs. In some cases DRPs also lead to poor compliance and poor clinical response. Few patients even reported worsening of their condition.

6. Conclusion

DRPs in patients with chronic diseases have been linked to increased risk negative clinical outcome. It is an important task for community pharmacists to identify, resolve, and prevent the occurrence of DRP in patients which, in the coming years, is expected to grow considerably in size⁸. In this study the consequences of the DRPs were identified. The DRPs identified were classified according to the Hepler and Strand classification. The consequences of the drug related problems were found to be hospitalization, poor clinical response, reduced patient compliance and worsening of patient condition. Primary care visit and hospitalization are the common consequences found. Drug Related Problems (DRPs) may lead to increased health care cost, morbidity, mortality and decreased quality of life. And thus, increases the economic burden for the patient.³ Awareness regarding these DRPs may help to identify, resolve, and prevent potential DRPs and is a prerequisite for better patient care [4].

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