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PHARMACOTHERAPY EVALUATION OF DIABETIC PATIENTS IN WARD OF GENERAL MEDICINE, NORTHWEST GENERAL HOSPITAL & RESEARCH CENTRE, A CASE STUDY FROM KHYBER PAKHTUNKHWA , PAKISTAN.

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Abstract

Drug therapy problems are frequent and major challenge to health care providers that are related with morbidity, mortality and patient's quality of life. This study aimed to identify drug related problems and to highlight the role of clinical pharmacist at ward level in tertiary hospitals of district Peshawar, Khyber Pakhtunkhwa Pakistan. A total of 15 diabetic patient's drug therapy details were recorded in medical Ward at Northwest General Hospital and Research Center, Peshawar, on a standard designed questionnaire which included patients demographics, disease history, medication history, laboratory data, diagnosis and drug-therapy provided in the hospital, monitoring notes and management plan for drug related problems, discharge medication, treatment outcomes and other pertinent information from December 2013 to February 2014.The percentage incidence of type II diabetes mellitus 13 (86.66%), gestational diabetes 1 (6.6667%), type I diabetes mellitus 1 (6.6667%) were documented .The total number of patients were 15, out of which 6 (40%) were male and 9 (60%) were female. A total of 33 DRPs were identified from 15 patients drug therapy details. Majority drug related problems resulted from drug-drug interactions (60.06%). In order to optimize pharmacotherapy and eliminate drug related problems, pharmacist should be placed in health care team in ward level. With the focus on individual patients, extensive and responsible clinical pharmacy services will be a crucial segment of modern-day health care.

Key words: Drug related problems, Pharmacist, Diabetes Mellitus, Drug interactions

Abbreviations: Drug related Problems (DRPs), Pharmaceutical care network Europe (PCNE)

Introduction

Diabetes mellitus is a syndrome characterizes by diminished carbohydrates, fat, and protein metabolism brought on by either lack of insulin secretion or diminished sensitivity of the tissues to insulin [1].

Drug-related problems are pharmacotherapy problems that truly or potentially have an impact on desired health outcome [2]. This is probably due to patients receiving multiple drugs to control their medical conditions, all of which promote DRPs. Several factors could contribute to DRPs. In geriatrics, co-morbidities, poor medication adherence and poly-pharmacy potentially cause DRPs [3,4]. Drug related issues could be characterized as any occasion or condition including the drug therapy, which interferes on the other hand conceivably, interferes with the patient, attaining an ideal outcome of desired therapeutic goal. Drug related problems are frequent and may result in reduced quality of life, and even morbidity and mortality [5]. Drug therapy has become so difficult that no one professional is expected to optimize the drug therapy and control drug related problems alone. Drug-related morbidity and mortality are often preventable, and pharmaceutical services can reduce the number of ADRs, the length of hospital stays and the cost of care. Pharmacists must abandon factionalism and adopt patient-centered pharmaceutical care as their philosophy of practice [6]. The aim of the study was to identify the drug related problems and highlight the role of clinical pharmacist in a tertiary care setting.

Material and method

This study was carried during a 3-months period from 25th November 2013 to 8th February 2014 in Medical Ward of Northwest General Hospital and Research Center, Peshawar, Khyber Pakhtunkhwa, Pakistan, among patients who were being treated under the medicine ward, in-patients of both sex and age undergoing treatment for diabetes were included. A standard questionnaire was designed for recording patient's case histories and all other relevant information as described by Fazli Khudaa et al 2013[7]. We have applied the database to check drug-drug interactions using Micromedex Drug-Reax® Software (Thomson Reuters Healthcare Inc., Greenwood Village, Colorado, United States and the drugs.com website as previously used by Stephany Duda in 2005[8]. The PCNE Classification V 6.2 were used for the documentation of DRPs throughout the study. All relevant DRPs were discussed within the healthcare team during ward rounds. The patient's response to drug treatment was monitored throughout the hospital stay. Data were analyzed in Microsoft Excel.

Results

A total of 15 patients drug therapy details were recorded in 3-months study period ,among the 15 patients 6 (40%) were male and 9 (60%) were female, mean age was 54 years and average hospital stay was 7 days. The demographic details and co-morbid conditions of patients are summarized in table 1. The main cause of hospitalization was diabetes mellitus, sign, symptoms and the co-morbid conditions are given below in figure 1.

The nature of potential drug therapy problems, grouped to three, categories were identified namely, prescriber related potential DRPs, drug related potential DRPs and patient related DRPs.

The whole medication therapy provided in the hospital was analyzed for the drug related problems; the identified drug related problems were untreated conditions 2 (6.060%) therapeutic duplication 2 (6.060%) dose adjustment in hepatic impairment 1 (3.030%) Sub-therapeutic dosage 2 (6.060%), adverse drug reactions 2 (6.060%), Drug interactions 20 (60.060%), Noncompliance 2 (6.060%) and poly-pharmacy 3 (9.090%), the drug related problems are summarized in table 2.

Table 3 explicate, drug interactions,with severity level, which were detected. The drugs for which more interactions documented were Insulin, diuretics, beta blockers, corticosteroids.

Discussion

DRPs are relatively common in hospitalized patients and can results in patients' morbidity and mortality and increased expenditures [9], the number of drugs used and the number of clinical risk factors considerably and independently influenced the risk for DRPs [10]. A total of 33 drug related problems were identified from 15 patients' therapy charts. Most of the DPRs observed in our study resulted from the drug-drug interactions (60.060%), of the total DRPs identified which incorporated more of drug-drug interactions 20, this observation is consistent with the study carried out by Ismail et al [11] in which drug interactions prevalence ranges from 45% to 77.5%, followed by Polypharmacy for three patients more than nine drugs were prescribed. Keeping in view poor economic status of majority population, the health care professional may prescribe minimum possible number of drugs but it is quite understood that large numbers of

drugs may be prescribed in case of need. In Pakistan drug therapy is the most common means of medical intervention. It is specified that average number of drugs prescribed per patient is higher when equated with the rest of the world [12]. A full fledge and established clinical pharmacy system does not exist in the hospital settings of Pakistan [13,14]. Also, irrational use of drugs is common and a serious problem in healthcare setup of Pakistan [12, 15-22]. It is a well-known fact that polypharmacy is strongly associated with DRPs and this has been shown by numerous studies. It has been reported that a one unit increase in the number of drugs can lead to an increase of 8.6% in the number of DRPs [23]. Poly pharmacy carries the risk of drug interactions and adverse drug reactions [24].

In 2 patients conditions were not adequately treated, No relevant drug therapy was prescribed for indication like ascites and ischemic heart disease, which reflects poor health care system that require improvements, 2 followed by therapeutic duplication, 2 sub therapeutic dose, and 1 dose adjustment in hepatic impairment . In this study, Adverse reactions accounted for (6.060%) of the total DPRs. Drug related problems due to patients or provider contributed (6.060%) of the total DRPs which included more of non-compliance. In short drug related problems (DRPs) can interfere with the achievement of desired therapeutic goals. Medication therapy can be rationalized and above problems can be solved by placing pharmacist in the health care providing team in hospital and community level.

Pharmacist is the only professional person that can provide information about the dugs both to the health care team and to patients and knowledge about drug related problem. Clinical pharmacy services can be valuable to a health care setting and can potentially lead to a decrease in health care expenses and to an improvement of the standard of patient care.

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Conflict of interest

No conflict of interest.

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Table 1. Demographic details of the study patients

Characteristics	Numbers (n=15)
Gender	Male 06
	Female 09
Age group (Years)	Years
Mean	54
Range	82
Average hospital stay	Days
Mean	07
Range	11
Diagnoses	
Diabetes mellitus (Total)	15
Known type II diabetes	13
Gestational diabetes	01
Type I diabetes	01

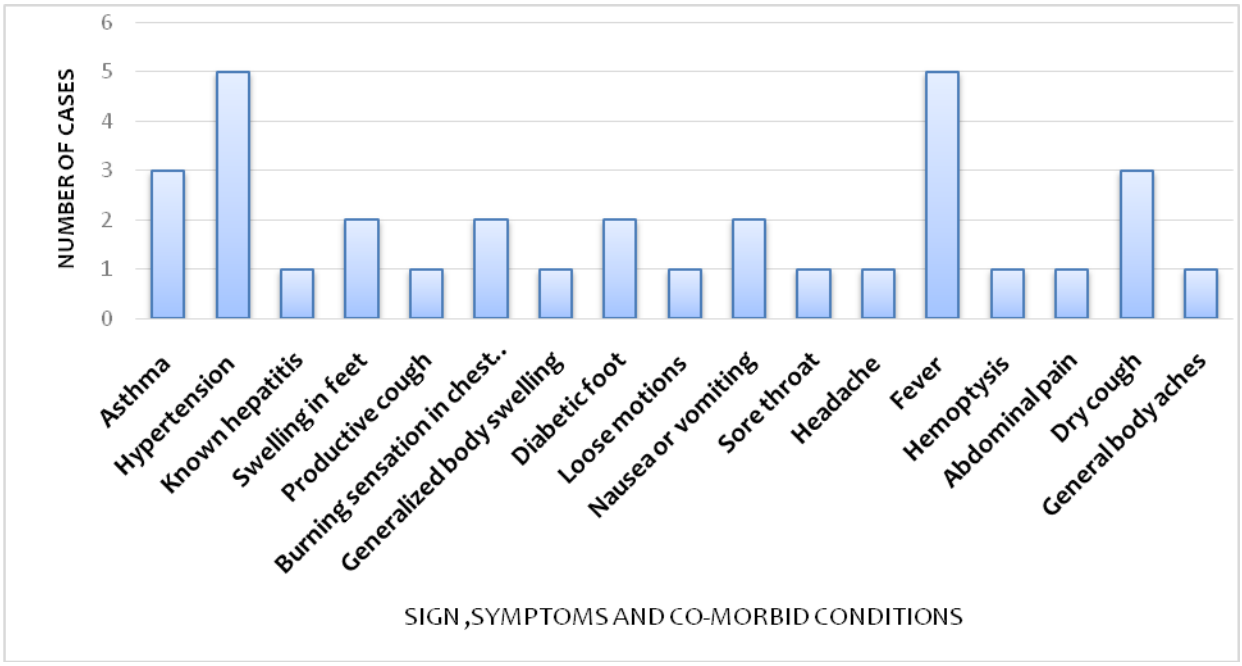

Figure 1. Sign, symptoms and co-morbid Conditions

Table 2. Identified Drug related Problems

S.NO	Drug related problems	Frequency	Percentage
01	Untreated conditions	02	6.060%
02	Sub-therapeutic dosage	02	6.060%
03	Adverse drug reactions	01	3.030%
04	Drug interactions	20	60.60%
05	Noncompliance	02	6.060%
06	Dose adjustment in hepatic impairment	01	3.030%
07	Therapeutic duplication	02	6.060%
08	Poly-pharmacy	03	9.090%

Table 3. Drug interactions Severity Levels

S.No	Interaction	Frequency	Percentage
01	Major Interaction	04	20%
02	Moderate Interaction	13	65%
03	Minor Interaction	03	15%