

DRUG THERAPY PROBLEMS IN GENERAL INTERNAL MEDICINE: PHARMACIST'S INTERVENTIONS: A RETROSPECTIVE DESCRIPTIVE STUDY OF A TERTIARY HOSPITAL IN NIGERIA

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Abstract

Background: Drug Therapy Problems (DTPs) are a major challenge in healthcare. They are associated with increased length of hospitalization, increased cost of treatment, misdiagnosis, decreased patients satisfaction with care, and increased morbidity and mortality. Pharmacists are trained professionals with the expertise to identify DTPs, whether actual or potential, and make necessary interventions via the practice of Pharmaceutical Care. However, in Nigeria, this role of Pharmacists is seldom known and appreciated.

Objective: The objective of this study was to carry out a quantitative analysis and classification of DTPs and interventions done by Pharmacists in the hospital, and to showcase the acceptability of this role of Pharmacists especially by Physicians.

Methods: The research was conducted in Federal Medical Center (FMC), Makurdi, Benue State, Nigeria. It was a retrospective cross-sectional study in which data was obtained from medical records of patients hospitalized from January, 2014 to December, 2014 into the wards of internal medicine. All DTPs identified and interventions made by Pharmacists within the year 2014, evidenced by documentation, were extracted. Analyses were done using simple descriptive statistics. The acceptability of this Pharmacists role was measured using level of implementation of interventions by Physicians.

Results: A total of 566 patients were attended to by the Pharmacists with 234 identified and documented DTPs. A total of 233(99.57%) interventions were made, 3 of which were unnecessary interventions .. Out of the 233 interventions made by Pharmacists, 224 [96.14%] were implemented while 9 [3.86%] were not. Polypharmacy and co-morbidities were identified as major predictors of DTPs. There was one DTP identified with no intervention.

Conclusion: It was observed that there was general acceptability of Pharmacists' role in identifying and resolving DTPs as evidenced by the high level of implementation of Pharmacists interventions. Co-morbidities and polypharmacy were identified as the major contributory factor to the occurrence of DTPs in these patients.

Keywords: Drug Therapy Problems(DTPs), Pharmacists Interventions

Introduction

The core clinical responsibility of a Pharmaceutical Care practitioner is to identify and resolve Drug Therapy Problems (DTPs).[1] The main aim of identifying and resolving DTPs is to ensure the achievement of treatment goals and the realization of the best possible desired outcomes which may be Economic, Clinical or Humanistic Outcomes (ECHO). Identification and resolution of DTPs is the most central component of the Pharmaceutical Care process. Pharmacists have the expertise to detect, resolve and prevent DTPs in order to impact positively on patients' safety.

Drug Therapy problems are a major concern in health care because they are associated with increased treatment cost, morbidity and mortality.[5,9]. They were considered the 4th to 6th cause of death in the USA accounting for 130 to 177.4 Billion US dollars.[6]

A DTP is any unwanted incident related to medication therapy that actually or potentially affects the desired goals of treatment.[2] DTPs can occur at any point in the treatment process: prescribing, transcribing, dispensing and administration[3], and can present in different forms. They are found to be associated mostly with Polypharmacy, older age and co-morbidities.[1,4,10]

Findings from literatures that assessed Hospitalization due to DTPs have shown an average prevalence rate of 15.4% [10] A multicentered prospective observational study showed high prevalence of DTPs among patients admitted in the medical wards.[14] Mohammed Biset et al 2019 reported that about one third of DTPs admissions were definitely preventable and more than 40% potentially preventable. This is in line with Abubakar Jatau et al., 2015 where more than half of Adverse Drug events –related emergency department visits in developing countries were reported to be potentially preventable [11]

The technology of medicines is very complex. Studies have shown that the prevalence of drug-related admissions varies from 1.3% -41.3% with the average of 15.4%.[10] This can be prevented by the involvement of Clinical Pharmacists in patients management process. In Nigeria there is still generally lack of acceptability of this Pharmacists role in many of the Hospitals. In this hospital, there is paucity of data to demonstrate this Pharmacists role and its acceptability. The objective of this study was to analyze and classify DTPs identified by Pharmacists and ascertain the acceptability of this Pharmacists role especially by Physicians.

Method

Study setting

The study was conducted in Federal Medical Center, Makurdi (FMCM), Benue State. FMCM is a tertiary and referral health care facility located in North Central Nigeria. It is a 400 bedded capacity Hospital with different categories of clinicians: 36 Pharmacists, over a hundred Physicians, about 400 Nurses, Laboratory Scientists, Dieticians, clinical Psychologists etc

Study Design

A retrospective, descriptive study in which data was extracted in which data were extracted from medical records of patients admitted into the male and female medical wards of the hospital from the period of January to December, 2014.

Inclusion and exclusion criteria

Only records of patients who were seen by the Pharmacists within the study period were used for data collected. Persons admitted within the period but not attended to by the Pharmacists team were not considered.

Data collection and identification of drug therapy problems

Collection of data was done by Pharmacists with several years of experience. Data were obtained from a compilation of Pharmaceutical Care documentations done by Pharmacists, posted to the medical male and female wards, on PC forms, available in the patients' folders. All DTPs identified, all interventions done whether implemented or not, were captured.

Data Management

Data were checked for completeness and consistency before processing. Descriptive statistical analysis was done using descriptive statistics. Classification of data was done based on the type of DTP and frequency of occurrence, the number of DTPs identified and interventions, and the level of implementation of such interventions.

Ethical consideration

The Health and Ethical Research Committee (HERC) of Federal Medical Center, Makurdi gave ethical approval for the conduct of this research. Confidentiality of Patients data was ensured both during and after the data collection process.

Result

A total of 566 persons were attended to by the Pharmacists. Both sexes were almost equally represented (278 and 288 males and females respectively). See Table 1 Below.

Table 1: Sex distribution of Patients

Sex	Frequency	Percentage (%)
Male	278	49.12
Female	288	50.88

A total of 234 Drug Therapy Problems were identified with 233 (99.57%) interventions. 230 (98.71%) of the interventions were correct, 2 (0.86%) wrong and 1 (0.43%) unnecessary with 224 (96.14%) implementation. Only 9 (3.86%) interventions, inclusive of the wrong and unnecessary interventions were not implemented. Table 2

Table 2: Drug Therapy Problems (DTPs) and interventions

Item description	Frequency	Percentage (%)
Number of Drug therapy problems (DTPs)	234	100
Interventions made	233	99.57
DTPs identified but no interventions	1	0.43
Necessary intervention	230	98.71
Unnecessary interventions	3	1.29
Interventions implemented	224	96.14
Interventions not implemented	9	3.86

Drug Therapy Problems with most occurrences were: need for additional drugs, 36(15.65%), wrong drug administration, 21(9.13%), Adverse Drug Reactions (ADRs), 16 (6.96) and drug–drug interaction, 16 (6.96). No indication and wrong storage representing 1 (0.43) each as well as wrong dosage, need for drug substitution and drugs administered but not documented represented by 2 (0.87) each were Drug Therapy Problems least in occurrence. Table 3

Table 3: Classification of DTPs with Frequencies

Drug Therapy Problems (DTPs).	Frequency	Percentage (%)
Need for additional drug	36	15.65
Wrong drug administration	21	9.13
Adverse Drug Reaction (ADR)	16	6.96
Drug-drug interaction	16	6.96

Others	15	6.52
Wrong charting	13	5.65
Dose too high	11	4.78
Dose too low	10	4.35
Drug not charted	9	3.91
Incomplete treatment	9	3.91
Untreated indication	8	3.48
Not transcribed	7	3.04
Unaffordability	7	3.04
Unnecessary drug	7	3.04
Contraindication	6	2.61
Non adherence	6	2.61
Drug not administered	5	2.17
Drug-disease interaction	5	2.17
Unavailability of drugs	4	1.74
Wrong drug	4	1.74
Treatment failure	4	1.74
Wrong dose	3	1.30
Drug administered but not documented	2	0.87
Need for drug substitution	2	0.87
Wrong dosage	2	0.87
Wrong storage	1	0.43
No indication	1	0.43

Total	230	100
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Unavailability (=> drugs not bought by patients and those not easily accessible)

Wrong drug administration (=> wrong frequency of administration, missed doses, untimely drug administration, time of administration not documented and wrong route of administration) (*This definition is for the purpose of clarity in the research.*)

Discussions

The current study provides important information on the common Drug Therapy Problems in a clinical setting and the role of clinical Pharmacists in identifying and resolving DTPs as well as the acceptability of this role by Physicians. This study demonstrated high prevalence of DTPs among In-patients of the medical wards of the hospital. This agrees with several other studies that have also shown high prevalence of DTPs in different clinical setting. [5,8, 11,13, 14, 15,19]

Categorization of drug related problems coupled with patients co-operation will help the practitioner to construct a care plan to resolve the DTPs^[7] In this study, need for additional drug was identified as the highest occurring DTP. This was in line with UIH Eze et al, 2011^[7] and Fentie W and Tarekegn 2020^[9] where need for additional drug was reported to be among DTPs with the highest occurrence among Elderly in-patients^[7] Also, need for additional drug was rated high in studies done in Ehtiopai (31%), France (30%), Canada (51.2%) and Pakinstan (40.19%).^[15, 16, 17, 18] Drug interactions and dosing problems were also considered major DTPs in this study. A study among renal problems in 3 different hospitals also identified dosing problems as DTPs of concern.^[8]

A multivariate logistic regression analysis by Tefera GM et al reported that only Polypharmacy and length of stay in the hospital were found to be independent predictors for DTPs according to them, age, sex and co-morbidities were not significant predictors^[5] This study agrees with that of Tefera GM et al. with respect to Polypharmacy being a contributory factor to the occurrence of DTPs but disagrees with that of co-morbidities not being a significant factor. Several other studies have mentioned polypharmacy and co-morbidities as risk factors for developing DTPs. [2,4,19] Fentie Wendie and Tarekegn Angamo M , 2020^[9] reported that length of hospital admission^{and} sex were risk factors for non compliance.⁽⁹⁾ In this research, however, sex was not a determinant factor. This study showed that DTPs were majorly encountered by patients with co-morbid conditions and in whom polypharmacy was evident This is in agreement with the result of Aster Wakjira et al, where polypharmacy, comorbidities were reported to be some of the factors associated with medication therapy problems.^[15]

The level of acceptability of this role of Pharmacists by Physicians was measured by the level of implementation of Pharmacists interventions. This study demonstrated that almost all Pharmacists' interventions were implemented. This strongly indicates that the role of Pharmacists in detecting and resolving DTPs is clinical settings is highly appreciated.

Conclusion

The study reported high prevalence of DTPs among patients admitted into the wards of internal medicine department of the hospital. There was high acceptability of the role of Pharmacists identifying drug therapy problems. This was evidenced by the implementation of almost all interventions made by the Pharmacist.

Authors Contribution.

All authors made substantial contributions to conception and design, data collection and analysis and interpretation of data. They all took part in the drafting of the article and gave final approval of the version to be published; and agreed to be accountable for all aspect of the work.

Conflict of Interest

The authors reported no conflict of interest.

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