

Assessment of drug therapy problems (DTPS) in out-patient pharmacy prescriptions at the National Orthopaedic Hospital, Igbobi

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ABSTRACT

Background: Pharmaceutical care is a philosophy and model of pharmacy practice and Drug Therapy Problems (DTPs) are the heart and soul of pharmaceutical care.

Objectives: To determine the drug therapy problems identified and corresponding pharmaceutical care interventions carried out at the out -patient pharmacy unit as well as the drug therapy problem and pharmaceutical care intervention with the highest frequency.

Methods: A Drug Therapy Problem assessment/intervention form which was designed by the Out Patient Pharmacy Department was used for the purpose of this research. Drug therapy problems encountered over a five month period were assessed and the appropriate intervention carried out and documented in the form. A total of 50 drug therapy problems were encountered during the research period on the basis of documentation of each drug therapy problem as it is encountered. Filled drug therapy problem assessment/intervention forms were analyzed using descriptive statistics with the aid of Epi-info version 3.5.1 statistical package.

Results: An analysis of the drug therapy problems revealed that drug interaction accounted for the highest number of drug therapy problems of 14(28%) while non adherence accounted for the lowest number of drug therapy problems of 1(2%), while the remaining classes of drug therapy problems ranges between these values; dosage too high 9(18%), dosage too low 8(16%), Adverse Drug Reaction/Adverse Drug Event 4(8%), Wrong Drug 8(16%), unnecessary drug therapy 10(20%).

Conclusion: Drug interaction accounted for a simple majority of the drug therapy problems, while non-adherence was the least common of the drug therapy problems and instructions on how drugs are to be used as well as change of dosage were the major pharmaceutical care interventions.

Key Words: Pharmaceutical care, Drug Therapy Problems, Interventions

Évaluation des problèmes reliés à la pharmacothérapie (PRP) dans les prescriptions de pharmacie externe à l'hôpital national orthopédique d'Igbobi

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RESUME

Contexte : Les soins pharmaceutiques sont une philosophie et un modèle de pratique pharmaceutique et les problèmes reliés à la pharmacothérapie (PRP) sont le cœur et l'âme des soins pharmaceutiques.

Objectifs : Déterminer les problèmes de pharmacothérapie identifiés et les interventions de soins pharmaceutiques correspondantes réalisées dans l'unité de pharmacie ambulatoire ainsi que le problème de pharmacothérapie et les interventions de soins pharmaceutiques avec la plus grande fréquence.

Méthodes : Un formulaire d'évaluation et d'intervention sur les problèmes de pharmacothérapie qui a été conçu par le service de pharmacie des patients externes a été utilisé aux fins de cette recherche. Les problèmes reliés à la pharmacothérapie rencontrés sur une période de cinq mois ont été évalués et l'intervention appropriée a été réalisée et documentée dans le formulaire. Au total, 50 problèmes de pharmacothérapie ont été rencontrés au cours de la période de recherche sur la base de la documentation de chaque problème de pharmacothérapie tel qu'il est rencontré. Les formulaires d'évaluation/d'intervention des problèmes de pharmacothérapie remplis ont été analysés à l'aide de statistiques descriptives à l'aide de la version 3.5.1 du progiciel statistique Epi-info.

Résultats: Une analyse des problèmes de pharmacothérapie a révélé que les interactions médicamenteuses représentaient le plus grand nombre de problèmes de pharmacothérapie de 14 (28%), tandis que la non-observance représentait le plus faible nombre de problèmes de pharmacothérapie de 1 (2%), tandis que les autres les classes de problèmes de pharmacothérapie se situent entre ces valeurs; dose trop élevée 9 (18%), dose trop faible 8 (16%), réaction indésirable au médicament / événement indésirable médicamenteux 4 (8%), mauvais médicament 8 (16%), traitement médicamenteux inutile 10 (20%).

Conclusion : Les interactions médicamenteuses représentaient la majorité simple des problèmes de pharmacothérapie, tandis que la non-observance était le moins courant des problèmes de pharmacothérapie et les instructions sur la façon dont les médicaments doivent être utilisés ainsi que le changement de posologie étaient les principales interventions de soins pharmaceutiques.

Mots-clés : soins pharmaceutiques, problèmes de pharmacothérapie, interventions

INTRODUCTION

Pharmaceutical care is the responsible provision of drug therapy for the purpose of achieving definite outcomes that improves a patient quality of life¹. Pharmaceutical care is a practice in which the practitioner takes responsibility for a patient's drug related needs and holds himself or herself accountable for meeting these needs and this is based on the philosophy of pharmaceutical care been a social need, having a patient-centred approach in its implementation, caring and pharmacists taking responsibility in terms of identifying a patient drug related needs and meeting those needs better than anybody else.¹ Drug Therapy Problems (DTPs) are the hearts and souls of pharmaceutical care.² A drug therapy problem is any undesirable event experienced by a patient that involves, or is suspected to involve a drug therapy and that interferes with achieving the desired goals of therapy². Accordingly, in clinical medicine, a wide range of DTPs may arise and these have been grouped into 8 main classes^{3,4,5,6}.

An actual drug therapy is a drug therapy problem that has resulted in untoward clinical manifestations (e.g. a drug related rash, an adverse drug reaction), or therapy failure due to incorrect dosage. A potential problem is not manifest, but if left unresolved, it may lead to drug-related harm to the patient. Examples are the administration of a Non-Steroidal Anti-Inflammatory Drugs (NSAIDs) to a patient with renal failure, or erythromycin to a patient taking warfarin or simvastatin.

Drug Therapy Problems have been identified as contributing to negative clinical and economic outcomes in several international health care systems such as the Netherlands, Denmark, New Zealand, Qatar, Saudi Arabia and Nigeria.^{6,7,8}

The burden of DTP on population health is enormous; as many as one in ten patients are harmed while receiving hospital care in developed countries.⁹ In United States for instance, the Center for Disease Control (CDC) estimates that every day, 44 people die from overdose of prescription painkiller (CDC, 2018). Although data is limited, the burden of DTP is likely to be much worse in low and middle-income countries due to weak health systems and shortages of trained health care workers.

Several studies have characterised the nature of drug therapy problems and associated pharmacists' intervention in both hospitalised and ambulatory patients. A study also shows that clinical pharmacists

make significant contribution towards achieving optimal therapeutic outcome. It as well demonstrates the need for active scrutiny of prescription and interventions by clinical pharmacist.⁶

The general objective of this work is to determine drug therapy problems and interventions carried out at the Out-patient pharmacy of the National Orthopaedic Hospital, Igbobi, Lagos

The specific objective was to determine which of the identified Drug Therapy Problems with the highest frequency of occurrence

METHODS

Setting and sample and population

The study was carried out at the outpatient pharmacy unit of the National Orthopaedic Hospital Igbobi. The cohort of patients used were those patients that come to the outpatient pharmacy to have their prescriptions filled after their appointment at the outpatient clinic of the National Orthopaedic Hospital. An average of about 70-80 prescriptions are attended to each day at the outpatient pharmacy unit of the hospital. The Pharmaceutical Care Network Europe (PCNE) Drug-related problem classification guidelines version 7 was used in designing the pharmaceutical care intervention form for the purpose of this research and classifying and documenting the drug related problems identified in any outpatient prescription seen.

Data analysis

Analysis of the filled pharmaceutical care intervention forms was carried out using descriptive statistics with the aid of Epi-info statistical package version 3.5.1

RESULTS

Table 1 shows the demographic distribution of the patients. Majority of the patients were females with a simple majority of the patients been within the 51-60, 61-70- and 71-80- years age bands

Table 2 analysed the drug therapy problems encountered at the outpatient pharmacy. Drug interaction accounted for the largest frequency of the drug therapy problems (28%) with non- adherence being the least encountered (2%).

Table 3 showed the level of intervention and the proposed interventions for the various drug therapy

problems. Level of interventions ranged from the prescriber to drug levels. Interventions proposed ranged from change of dosage to substitution of drug with available therapeutic alternative available.

Table 4 showed the outcome of the drug therapy problems interventions carried out. Most of the interventions resulted in the resolutions of the identified drug therapy problems (96%).

Table 1: Demographic profiles of patients variable

Sex	Number of Patients	Percentage (%)
Male	22	44
Female	27	54
Non-Response	1	2
Age (Years)		
<1-10	2	4
11 - 20	2	4
21 - 30	3	6
31 - 40	4	8
41 - 50	5	10
51 - 60	6	12
61 - 70	6	12
71 - 80	8	16
81 - 90	2	4
91 - 100	1	2
Non-Response	11	22

Table 2: Item analysis of the drug therapy problems

Drug Therapy Problem	Frequency	Percentage (%)
Additional Drug Therapy:		
Untreated Indication	1	2
Synergistic or Potentiating		
Drug Required	2	4
Dosage Too High:		
Wrong Dose	1	2
Dosing Regimen Too		
Frequent	7	14
		16
Drug Interaction:		
Pharmacokinetic	2	4
Potential Drug		
Interaction	12	24
		28
Dosage Too Low:		
Wrong Dose	5	10
Dosing Regimen		
Too Frequent	1	2
Duration	1	2
		14
Adverse Drug Reaction/Adverse Drug Event:		
Undesirable Side Effect	1	2
Unsafe Drug for Patient	3	6
		8
Wrong Drug:		
Contraindication	5	10
Inappropriate Dosage Form	2	4
		14
Inappropriate Adherence:		
Cannot Afford		
Drug Product	1	2
		2
Unnecessary Drug Therapy:		
Duplication of Therapy	10	20
		20

Table 3: Item Analysis of proposed interventions on identified drug therapy problems

Level of intervention	Intervention	Frequency	Percent (%)	
Prescriber Level				
	Prescriber informed and proposed intervention approved by prescriber	5	10	10
At patient/care giver level				
	Dosage changed	10	20	20
	Drug stopped	4	8	8
	Drug withheld	7	14	14
	Formulation changed	3	6	6
	Instruction for use changed	10	20	20
	New drug started after discontinuing previous drug	4	8	8
	Additional drug information provided	1	2	2
	Patient medication counselling	2	4	4
	Written information provided only	1	2	2
At drug level				
	Drug changed to new one	3	6	6
	Drug substituted with available drug	1	2	2

Table 4: Outcomes of interventions in drug therapy problems

Outcome	Frequency	Percentage (%)
Solved	48	96
Partially solved	1	2
Others	1	2

DISCUSSION

Drug therapy problems

Drug Therapy Problems are at the heart of all pharmaceutical care interventions.² In a study of the pattern of drug therapy problems and interventions among ambulatory HIV patients receiving antiretroviral drug therapy in Nigeria, it was found out that a simple majority of the drug therapy problem encountered had to do with the prescription based omission of necessary drug therapy (21.2%)⁸, this study however revealed that drug interaction accounted for the simple majority of the drug therapy problem encountered (28%) most of which however comitant use of two NSAIDs have from studies not to be beneficial creases the risk of unpleasant side effects most especially peptic ulceration.¹⁰

Patient adherence to drug therapy plays an important part in the determination of clinical outcomes, however, a number of factors could result in non-adherence drug therapy high a cost of medications as well as the issue of drug non availability. In a study to determine the effect of clinical pharmacists pharmaceutical care intervention to ensure control of hypertension among outpatients, it was found out that factors such as complicated and hard to control disease course, the lifetime dosing period and patient economic condition as well as irrational and complex drug use were responsible for the poor pre intervention medication adherence.¹¹ This study revealed however that non adherence to drug therapy constituted a marginal reason (2%) for the drug therapy problems encountered during the study and was principally due to high cost of medication.

Adverse drug reaction is an unintended response of patients to drug therapy which is noxious and occur at doses normally used in man for the treatment, prophylaxis or the modification of physiological functions.¹² This study revealed that some of the drug therapy problems encountered were due to adverse drug reactions (8%) which was either allergic (n=3) or side effect (n=1) and the result is similar to a study carried out in where 6.25% of the drug therapy problems were due to adverse drug reactions were most allergic (n=4) and a single side effect (n=1).¹⁶

Irrational drug use may be due to drug under use or overuse. This study revealed that majority of the irrational drug use are due to the dose of the drug been too high (16%) as a result of too frequent the dosing regimen (n=7) or due to too high the dosage (n=1), while

the drug under use (14%) was principally due to wrong dose (n=5), infrequent dosing regimen (n=1), short duration of therapy (n=1). In a similar study carried out in Pakistan, drug therapy problems due to dose too high (n=1) and dose too low (n=2) accounted for 3.75% of the drug therapy problems.¹⁶

A drug therapy problem as a result of a drug being the wrong drug to take care of the medical condition could be as a result of the drug being contraindicated in the presence of an underlying medical condition e.g. use of an NSAID as an anti-inflammatory/analgesic agent in a patient who has an active peptic ulcer condition which could predispose the patient to a worsening of the peptic ulcer condition. In this study wrong drug as a drug therapy problem was found to be either due to contraindication (10%) or due to inappropriate dosage forms (4%)

Non Adherence as a drug therapy problem could be due to a number of factors which include patient experience of an unpleasant side effect when the medication was taken , exorbitant price of medication which makes the drug unavailable as a result of which affects patient ability to afford the purchase of the drug-this was found to be the principal reason for the inappropriate adherence of patient to the medication prescribed to them in this study(2%) and this was the least frequent of all the drug therapy problem encountered in this study.

Interventions carried out were at three levels: the prescriber, the patient/caregiver and at the drug levels. Majority of the interventions were at the patient care giver level (84%) though some of the drug therapy problems had interplay of the three levels at the intervention stage. At the patient/caregiver level, change of dosage (20%) as well as instruction for drug use (20%) both accounted for a simple majority of the pharmaceutical care intervention carried out while provision of additional drug information (2%), provision of written information on drug use (2%) as well as substitution of prescribed drugs with available therapeutic alternative (2%) at the drug level accounted for the least of the pharmaceutical care interventions. All other pharmaceutical care interventions at the various levels were in-between this range.

Majority of the drug therapy problems were resolved (96%) a case was however lost to follow up (2%) and another was partially resolved (2%).

Not all the demographic characteristic with respect to gender of the respondents were filled. This affected our

ability to determine accurately the distribution of the gender among male and female outpatients. The same also applies to the age distribution of affected patients.

CONCLUSION

Drug interaction was the major drug therapy problem, while non-adherence was the least common of the drug therapy problems and instructions on how drugs are to be used as well as change of dosage were the major pharmaceutical care interventions.

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