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Community Pharmacy/Hospital Based Assessment of Clinical Pharmacist Intervention for Safe and Effective Drug Use

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ABSTRACT

The purpose of the work was to evaluate the extent of interception of prescriptions requiring review for drug order that could have led to adverse drug events or irrational drug use in the community and public hospital pharmacy unit. Three government hospitals and community pharmacy outlets in Ikot Ekpene senatorial district in Akwa Ibom state, Nigeria were selected for the study which lasted 4 months. The pharmacists in the various units were inducted into the purpose of the work and the associated documentation processes. The data collected were patient's details, reasons for the intervention, doctor's contact details. The years of experience of the pharmacists in the community was significantly higher than those in the hospital setting in the study ($P < 0.05$). Within the study period, 698 and 1280 interventions were noted in the community and hospital units respectively. The prevalence of pharmacist intervention in terms of ratio of prescriptions generated and interventions made in the hospital was not significantly higher than in the community setting ($P < 0.05$). There was no significant difference in the ratio of therapy/information to safety intervention for the two units of practice but there was significant difference in the frequency of safety to therapy/information intervention within the individual units ($P < 0.05$). The percentage frequency of the safety interventions recorded in the hospital and community pharmacy units were thirty two percent (32) and thirty eight percent (38%) respectively. Active screening of prescriptions that leads to effective pharmaceutical interventions during dispensing process can provide useful contribution to healthcare delivery.

Keywords: Pharmacist's intervention, community pharmacy, government hospital.

INTRODUCTION

Rational use of medicines requires that patients receive medications appropriate to their clinical needs in doses that meet their own individual requirements for an adequate period of time and at the lowest cost to them and their community (1). Over 1.5 million preventable adverse drug reactions occur annually in the United States alone (2). Medication errors stemming from prescribing are the most prevalent form of medical error. Medication errors are preventable events that leads to inappropriate medication use or patients harm. The error can occur at the stage of medication prescribing by the physician or by the pharmacist, who labels, packages, compounds, dispenses, educates or monitors the use of the medicines (3). In developed countries, drug quick test leads to significant reduction in medication prescribing errors.

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The use of electronic prescribing and effective pharmacist monitoring and intervention have led to drastic reduction in observed adverse events due to drug inappropriate use (4). Today, reducing medication errors and improving patient safety have become common topics of discussion for the President of the United States, Federal and State legislators, the insurance industry, pharmaceutical companies, health care professionals and patients (5). This, however, is not news to clinical pharmacologists because improving the judicious use of medications and minimizing adverse drug reactions have always been their key areas of research. However, added to the older terms of adverse drug reactions and rational therapeutics, the new politically correct expression of medication error has emerged (6). Focusing on the word error has drawn attention to “prevention” and what can be done to minimize mistakes and improve patient safety. Webster’s New Collegiate Dictionary has several definitions of error, but the one that seems to be most appropriate in the context of medication errors is “an act that through ignorance, deficiency, or accident departs from or fails to achieve what should be done. “What should be done is generally known as “the five rights”: the right drug, right dose, right route, right time, and right patient. One can make an error of omission (failure to act correctly) or an error of commission (acted incorrectly). This study was aimed at assessing and comparing the nature of observable interventions in the community and hospital pharmacy units to provide insights to the details of each clinical pharmacy intervention and the potential health gains for the patients.

METHOD

This was a prospective, controlled study comparing 2 units of healthcare services where pharmaceutical care was performed. Three government hospitals represented the first unit and three community pharmacy outlets as the second were enlisted for the study and the pharmacists in charge invited for a 6 hours orientation workshop prior to the onset of the study, on the concept of pharmacist intervention and the required documentation processes. The study was performed for 4 months (July 2010 through October 2010). The eligibility criteria for prospective enrolment of the patients handling prescriptions in both units were (a) physician written and duly signed prescriptions (b) ability to locate the physician in cases of possible intervention (c) patient’s willingness to run between the unit and their physician in case of possible intervention. Intervention were categorized into two and subcategorized as expressed in Table 1. The statistics of the frequency of interventions, attitude of prescribers to interventions noted and the readiness of prescribers to effect prescription change was compared across the study units using Students t-test and the Mann-Whitney U-test.

RESULT

There were 698 and 1280 prescriptions evaluated from the community and hospital pharmacy units respectively. An average of 56 and 92 interventions were made monthly from the units. The

mean (SD) age of patient at the community 58.5 (11.2) was younger than of the hospital pharmacy unit 69.5 (14.5). There was a non significant ($P=0.45$) difference in the ratio of interventions made for patients per total prescriptions in the two units. The demographic information of the pharmacists who made the interventions at the hospital and community pharmacy outlets is expressed in Table 1. The pharmacists in both units made an average of 1.5 interventions per patients. There was a significantly higher physician’s response to spotted interventions compared with that of the community pharmacy units ($p < 0.05$). About twenty three percent (23.5%) of the interventions were adopted by the physicians while 76.5 were turned down amongst the therapeutic intervention. In the community unit, only about forty percent (47.5%) of the spotted interventions returned from the physician while about seventy eight percent (78.5%) of the total that returned were adopted by the physician.

Table 1: Demographics of superintendent pharmacists in the study area.

Parameters	Hospital Pharmacy	Community Pharmacy
Age (years) \pm SD	37.5 \pm 8.9	46.4 \pm 11.4
Mean years of experience \pm SD	10.7 \pm 6.3	17.2 \pm 15.2
Work hours \pm SD	10.0 \pm 2.4	15.0 \pm 3.50

Table 2: Categories and sub-categories of pharmacists’ intervention and percentage of total occurrence.

Description of intervention	Category of intervention	Percentage frequency
Dose adjustment	Safety	11.2
Dose adjustment	Therapeutic	27.9
Therapeutic addition/reduction	Therapeutic	15.4
Order clarification	Safety	3.6
Drug Interaction alert	Safety	5.4
Therapy interchange	Therapeutic	13.8
Therapy duplication	Safety	2.9
Therapy duplication	Therapeutic	9.9
Allergy alert	Safety	3.2
Monitoring caution	Safety	6.6
		100

The ratio of prescriptions to total prescriptions seen in the hospital setting was compared with that obtained in the community pharmacy outfits and are presented in Fig. 1. 79% and 12% of the safety related and therapy/information based interventions respectively were accepted and responded to by the prescribers and treatment changed in the hospital setting.

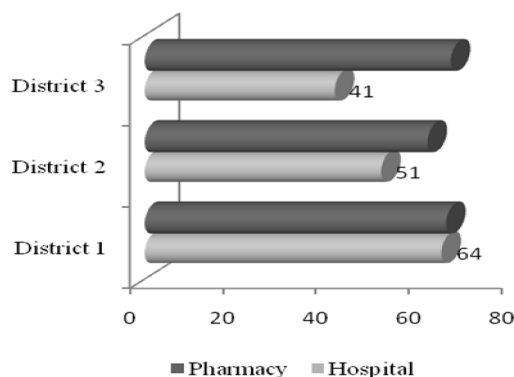


Fig. 1: The percentage of safety related to total intervention in the various districts in the study area.

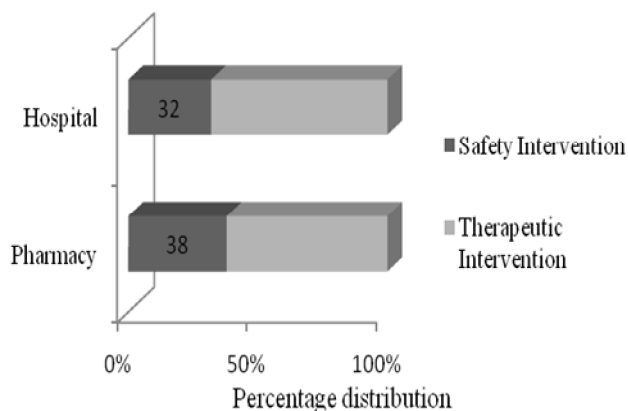


Fig. 2: The graph of safety and therapeutic interventions in the study centres.

DISCUSSION

This study demonstrated that charging and challenging pharmacists in the community and the various levels of hospital practice can appreciably reduce the incidence of prescribing errors and increase the opportunities to optimize medication therapy with the pharmacists' alerts and recommendations. Although the cost implication of the interventions was not in the scope of the study the trend observed could possibly have a positive reduction in medical cost.

Pharmacist intervention is a universal issue with similar potential impact on patient's safety and quantity of care. The study gives insight to the potential role of pharmacist in promoting rational drug prescribing in the study area (7). The results revealed the size of avoidable prescribing errors (8). This current study, to our knowledge is the first in the study area to demonstrate the type and frequency of prescribing errors that can lead to drug related complications in the absence of adequate pharmacist' intervention. This study also shows the readiness to accept the recommendations from pharmacists following such interventions especially in the community setting. There was no significant difference in the number of safety interventions (dosing problems) in the hospitals with that of the community pharmacy. Pharmacists can play a crucial role in identifying prescribing errors in the hospital inpatient; out-patient and commonly practices. A compilation of the finding of the research work can be done to form part o continuing education to address gaps in the prescribing process. Document and analysis intervention made should form routine action in pharmacy practice in all care centres. It is or others note those pharmacists are believed to require adequate clinical knowledge, skill and techniques to negotiate with clinician so as to be able to influence prescribing positively Fig 2. The pattern of prescribing in the study area presents features of safety related risks and information requiring issues to the same extent Fig 2. Prescribing is an art that requires detailed assessment of drugs pen-down. Prescriptions not properly written may be an exercise in futility or worse still complicate the health condition of the patient.

In a study in a U. K community pharmacy about 60% of interventions made by the pharmacist were accepted by the prescribers and the treatment changed accordingly (10).

Medication error is preventable events that may lead to inappropriate medication use or to patient harm. These errors can occurs at the stage of modulation prescribing by the physician or by even the pharmacist who labels, packages, and compound, dispense, educate or monitors the use of medicines (11).

Prescribing error occurs at the stage of prescribing decision or writing which results in an unintentionally significant reduction in the probability of treatment being timely. Prescribing errors may abound by reason of commission or omission on the part of the prescriber. In the developed countries, drugs quick test led to significant reduction in observation of adverse event due to drug misuse while in developing countries the watch on effective prescribing and adequate pharmacist based intervention of errors that can jeopardize the objection of therapy is not in force where there is intervention are rarely done.

CONCLUSION

Clinically oriented pharmacists can work with physicians to ensure optimal medication therapy in the community and hospital settings.

LIMITATION

No consistent method of follow up on interventions rejected by the prescribers. Prescriber's attitude to scrutiny of their prescriptions being negative as a result of perceived idea of encroachment.

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