



Assessment of dispensing practice in Khartoum state teaching hospitals

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ABSTRACT

A pharmacist must take reasonable steps to ensure that the dispensing of a medicine in accordance with a prescription or order is consistent with the safety of the patients in that prescription or order. This study aimed to characterize and evaluate the dispensing practices by pharmacists and pharmacy assistants in a sample of pharmacies in three teaching hospitals in Sudan. The study was conducted in 9 pharmacies in the participating hospitals; Khartoum Teaching Hospital, Omdurman Teaching Hospital, and Bahri Teaching Hospital. Checklist for evaluating the dispensing personnel was made within the framework of the standard indicators of the International Pharmaceutical Federation and the pharmacy board of Australia. Out of the nine observed pharmacies, only three have their pharmacy practice assessed by hospital pharmacy committees. Also, only four pharmacies (44.4%) maintaining their job description, while one pharmacy has no job description at all. The overall observed good dispensing practice at the participating hospital pharmacies is low. There is a need to train pharmacists to offer more appropriate dispensing to patients and have better-dispensing practice skills.

Keywords: Dispensing, Pharmacy, Sudan, Teaching Hospital, Pharmaceutical Care.



INTRODUCTION

Dispensing is the process of preparing and giving medicine to a named person on the basis of a prescription. It involves the correct translation of the instructions of the prescriber and the accurate preparation and labeling of medicine for use by the patient. This process may take place in a community pharmacy setting, hospital, health center, public or private clinic, or in a shop. Also, it can be carried out by many different kinds of people with a variety of training or background. During dispensing process, patients' well-being and their drug-related needs are the primary concern of the pharmacist. Pharmacists dispense medicine for the purpose of achieving definite outcomes that would improve the patient's quality of life. These outcomes are either curing the disease, reducing or eliminating symptoms,

arresting or slowing disease progression, or preventing diseases or symptoms. However, if any error or failure in the dispensing process occurs, this can result in an unpredictable adverse drug reaction, increases in morbidity, mortality or increases health care cost and can seriously affect the care of the patient. Pharmacists are the terminal healthcare professionals that patients perceive before commencing the drug therapy.^(1,2) They provide appropriate information to the patient about the rationalized use of medication ⁽³⁾ or intervene in case of problems. ⁽⁴⁾ The role of pharmacists in the community includes more than just dispensing medications. It involves identifying, preventing, and resolving drug-related problems, as well as encouraging proper use of medications, general health promotion and patient education, thus improving clinical outcome. Poor dispensing practice by pharmacist can lead to serious problems

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that can be avoided by appropriate training. Therefore, pharmacists through good dispensing practice have a unique opportunity to maintain good health, to avoid ill health and to make the best use of medicines. In dispensing a prescription, a pharmacist has to exercise an independent judgment to ensure the medicine is safe and appropriate for the patient, as well as that it conforms to the prescriber's requirements. If there is any doubt, the prescriber is to be contacted. In conforming to the above principle; dose, frequency, route of administration, duration of treatment, the presence or absence of other medicines, the patient's illness, medication history, and other relevant circumstances need to be taken into account.

In view of the global need to improve the use of medicines, World Health Organization (WHO) estimated that more than half of the medicines are inappropriately prescribed, dispensed or sold and the rest half, there is failure to take them correctly by the patients. This incorrect use may take the form of overuse, underuse, and misuse of prescription or non-prescription medicines.⁽⁵⁾ Additionally, in spite of significant improvement in access of medicine in a number of countries there is still deficiency of appropriate access to modern medicine or vaccines in some fraction of world's population. The majority of these people are either destitute or are living in remote rural areas where the supply of drugs is limited or nonexistent or both.⁽⁶⁾

In many health care institutions, especially in the developed countries, the role of the pharmacist in patient care, especially in dispensing drugs to patients, becomes more important. Pharmacists contribute the safe and effective use of pharmaceuticals at times when drugs are dispensed. They also play a significant role in promoting rationale use of drugs by providing drug information to the patient, and carrying out drug utilization studies. A safe dispenser needs thorough knowledge about different drugs, the particular product being dispensed and to have communication/consultation skills. Therefore, they have to be aware of promotional and marketing techniques that may be used. Additionally, to be an effective dispenser he/she needs an adequate drug supply, dispensing equipment, a relationship with the prescriber and status in the community.⁽⁷⁾

In Pharmacy Practice, the missions of the hospital pharmacist ranges from simple dispensing to ensure rights of the patients. These missions also include being part of the medication management in hospitals, which encompasses the entire way in which medicines are selected, procured, delivered,

prescribed, administered and reviewed. It also includes optimizing the contribution that medicines make to producing informed and desired outcomes; enhancing the safety and quality of all medicine related processes affecting patients; and ensure the 7 "rights" are respected: right patient, right dose, right route, right time, right drug with the right information and documentation.⁽⁸⁾

Hospital pharmacists are also involved in manufacturing of sterile and non-sterile products or medicines often from raw materials; manufacture of chemotherapeutic dosage regimen for the cancer patients; providing medicines information to healthcare professionals and the public; medicines management on the hospital wards; training, supervising and assessing junior staff and trainees; quality control of manufactured medicines; and dispensing and arranging Clinical Trial medicines.⁽⁹⁾

Dispensing is commonly assumed to be a simple, routine process that cannot go wrong. Nevertheless, all the resources involved in patient care prior to dispensing may be wasted if dispensing does not result in the named patient receiving an effective form of the correct drug, in appropriate packaging, and with the correct dose and advice. This good dispensing practice is a vital role pharmacists need to play as a part of their profession. Such a service will only ensure appropriate drug administration and usage in patients with varying disease conditions. That is also considered as an integral part of ethics and guidelines pharmacists need to follow while providing pharmaceutical care to patients. In fact, drug rules and pharmacy regulations of most countries did not have any provision for a good dispensing practice until recently. However, the International Pharmaceutical Federation (FIP) first adopted guidelines for Good Pharmaceutical Practice in 1993. These guidelines were developed as a reference to be used by some national pharmaceutical organizations, governments, and international pharmaceutical organizations to set up nationally accepted standards of Good Pharmacy Practice. WHO in 1997 endorsed a revised version of this document and subsequently approved by the FIP Council in the same year. In 2011, FIP and WHO adopted an updated version of Good Pharmacy Practice.

In Sudan, pharmacists' role has significantly grown and developed in the past few years. It does not only include the traditional product-oriented role of pharmacists, but has also extended to include the more patient-focused new clinical role, or what can be called providing pharmaceutical care to patients.

This is the first study of its kind in Sudan that aims at assessing and evaluating the dispensing practice provided by pharmacists and pharmacy assistants in a sample of outpatient pharmacies in Khartoum state three main teaching hospitals.

METHODS

Setting and Study Design: A descriptive cross-sectional hospital-based study was conducted at Khartoum state in three main teaching hospitals namely Khartoum Teaching Hospital, Omdurman Teaching Hospital, and Bahri Teaching Hospital. Three pharmacies were included from each hospital. Data collection took place between January to June 2013. The three hospitals were chosen based on the perceived dispensing requirements of the most dispensed medications at those hospitals.

Data Collection: Checklist for evaluating the dispensing practices was made within the

framework of the standard indicators of the International Pharmaceutical Federation and the Pharmacy Board of Australia.

Data Analysis: All data were coded and entered into the Statistical Package for Social Sciences (SPSS) for Windows version 16. Frequency and percentage were calculated and presented.

RESULTS

As presented in Table 1, the dispensing personnel were rated in six main themes. Although their level differ from one theme to another, the overall level is 51%. A similar result was obtained for a dispensing process that rated in two main themes and gave an overall range of about 50%. The dispensing environment was rated in three main themes, and all the themes were above the 50% with the overall result of about 60%.

Table 1: Assessment of Dispensing Practices

Domain	Theme	Percentage
<u>DISPENSING PERSONNEL</u>		51.0
	Qualification	68.5
	Quality of services	66.7
	Administrative issues	51.4
	Training	40.7
	Therapeutic Committee	11.1
<u>DISPENSING ENVIRONMENT</u>		60.6
	Design	56.6
	Hygiene	69.5
	Administrative	55.6
<u>DISPENSING PROCESS</u>		50.3
	Administrative	56.2
	Pharmaceutical care	44.4

Table 2: Demography of qualification of dispensers in Khartoum region

Qualification	Degree	Percentage
Non-professionals	10 + 2	7.6
	Graduate	17.3
	Master	9.2
Professional (Pharmacy)	Diploma	30.2
	Bachelor	25.9
	Master	9.8

DISCUSSION

Selection criteria for the senior pharmacist in the three main teaching hospitals in Khartoum State are very simple and only require that the senior pharmacists should be selected from the existing personnel and the selection also considers the experience and some recognized characters of the pharmacists while working in the hospital. There are no certain requirements for the post of senior

pharmacist other than being a pharmacist working in the same hospital. According to these criteria, authors found that 88.9% of the senior pharmacists are qualified, i.e. meeting the requirements. However, in comparison with Sultan Qaboos University Hospital (Oman), the senior pharmacist should have a higher degree in pharmacy or Masters in a specialized pharmacy area. His experience must be 4-10 years after completion of a pharmacy degree and 2-8 years after completion of

a Master degree or 4 years in the section/ area of specialization.⁽¹⁰⁾ Other study conducted in New Zealand stated that pharmacist should have undergone training in the preparation of medicines such as injections or eye drops, which must be sterile i.e. free from microbial contamination that could seriously injure a patient. Also, there should be training in handling of cytotoxic injections, which are used to treat patients with cancer, and which have to be handled under special conditions as they have the potential to be harmful. Other pharmacists, according to specialty, should have training in preparation for intravenous nutrition for patients after surgery, or who for other reasons cannot take food by mouth.⁽¹¹⁾

In other aspect, although the guidelines mandated that supervision of all professional aspects of the pharmacy must be carried out by the pharmacy supervisor in order to control and ensure good dispensing practice, results of the study revealed that only two-thirds of the sample (six out of the nine pharmacies) complying with this guideline and that the pharmacy supervisor does personally control and manage the whole process in the pharmacy.

There are only a few reports in the literature that have evaluated the criteria and factors influencing dispensing.^(12, 13) According to the study of Caamano *et al.*⁽¹⁴⁾, the dispensing practice of the pharmacists is associated with their perception of the pharmacist's responsibility for the rational use of drugs and their workload. Thus, they have suggested that pharmacies with excessive workload function in a more commercial way, reducing the time a pharmacist spends with each customer and exerting less control over prescriptions.

The supervision of the all professional aspects of the pharmacy can be obtained by the regular review of the pharmacy policies and procedures. Periodically there should be review and evaluation of the follow-up of the policies and procedures of the pharmacy operations by the personnel and the staff. The main responsibility of the supervisor is to maximize the adherence of the staff to the policies and the procedures which have to be produced and reviewed by the supervisor. In the three main studied hospitals, authors found that 77.8% of the pharmacies have policies and procedures that were prepared and reviewed by the supervisor.

For the supervisor to ensure the maximum comply of the personnel and staff to the policies and the procedures, he/she must spend a reasonable time in the pharmacy for monitoring, guiding and evaluating the performance of the personnel. The study showed that in 77.8% of the pharmacies, the

supervising pharmacists attend for a limited period at the pharmacy. For more effective supervision, it seems that the number of pharmacies under his/her supervision should be reduced so better supervision executed which, most probably, will be reflected in better adherence and comply of the staff to the policies and procedures. Authors found that some pharmacies had a supervisor pharmacist who is supervising only one pharmacy, and some pharmacies have no supervisors.

In a study conducted across the East Midlands, pharmacists and pharmacy technicians in each hospital recorded their contributions to patient care over a seven days period in November 2010 using a standardized data collection form, Excel spreadsheet and guidance notes. Data capture occurred 24 hours per day for a week and reflected the variation of different out of hours and weekend pharmacy services operating across the East Midlands. The most common type of error identified at the medicines reconciliation stage was the "unintentional omission of a medicine"; this represented 68 per cent of all the contributions at this stage. Prescribing a drug unintentionally or prescribing the wrong dose (or frequency) be far less common mistakes identified by the pharmacy teams.⁽¹⁵⁾

The administrator or the pharmacist in charge of the pharmacy is the best mean to ensure the implementation of policies and procedures. This is because the pharmacist in charge is the only one who is accountable and responsible for policies and procedures implementation, so he/she must be available and work in a pharmacy for full time. Moreover, practicing of the houseman ship pharmacist alone in the pharmacy will result in the poor implementation of the policies and the procedures of the pharmacy. However, the study revealed that only five out of the nine pharmacies having the pharmacist in charge work in the pharmacy for full time.

Hospital pharmacies must provide services 24 hour a day as the hospitals accept patients all through the 24 hours of the day. Nevertheless, the study showed that only six out of the nine hospital pharmacies provide around-the-clock service.

Working hours in the pharmacy must be managed in such a way that to reduce the dispensing errors. An adequate number of pharmacists working at any time will result in better performance and maximum outcome. Despite this, the study showed that only five out of the nine pharmacies providing around-the-clock services having two pharmacists at a time.

Regarding the determination of working hours of the individuals, a duty log must be maintained and verified by the pharmacist in charge. The study revealed that two out of the nine pharmacies do not keep a duty log maintained and signed by the pharmacist in charge.

Working in complex organizations such as hospitals with a large number of employees, each employee must know his/her duties, responsibilities, direct manager and supervisor. This can be achieved by having the organizational chart in the working area to facilitate and organize the reporting process in case of immediate actions or corrections are required. Only three out of the nine covered pharmacies are found having an organizational chart.

All the professional aspects of the pharmacy process must be carried out in the presence of a registered pharmacist. Therefore each and every pharmacy must be well organized and planned to have a pharmacist available in the pharmacy all the time. There should be a procedure for the temporary absence of the pharmacist in charge, and another pharmacist should cover the period of his absence. The study showed that seven pharmacies are complying with this guideline and having another pharmacist covering the absence of the pharmacist in charge.

Communication between the different departments in the hospital is an essential and crucial for the better performance of the hospitals. The pharmacy department must regularly communicate with other hospital departments to implement hospital policies and to report pharmacy department performance. This linkage can be done by allowing the pharmacist in charge to interact and formally communicate with the hospital administrator. The study showed that only six of the pharmacies, the pharmacist in charge, had a formal communication with the hospital administrator.

The improvement of the skills of the pharmacy staff must always be in mind by conducting an ongoing training program to attain high caliber personnel. Only two pharmacies out of the nine have an ongoing training program. The evaluation and determination of staff skill and knowledge of drug-dispensing can be improved and maximized by the ongoing training program. The study showed that only six of the pharmacies have a staff that with enough skill and knowledge about drug dispensing, meaning that 33.3% of the pharmacies are most likely to record the high incidence of errors. To avoid dispensing errors, all staff must have the optimum required skill and knowledge of drug dispensing, including the newly appointed

staff members. However, as it was revealed that only six out of the nine pharmacies provided appropriate training and information to the newly-appointed staff member, compliance with this guideline is doubtful.

Assessment of the practice of the pharmacy must be assessed at constant intervals in order to evaluate and assess the staff's performance and to determine and correct any malfunctioning in the whole pharmacy process. The study found that practice of pharmacy assessed by the hospital pharmacy committee in only three pharmacies (33.3%) out of the total nine pharmacies. Also, the control over the pharmacy staff is always a difficult task for the pharmacy administrator. This study showed that staff employed by pharmacy administrator occurred in only five pharmacies (55.6%) as indicated. The employment process must provide the job description that should be maintained and reviewed. Authors found that only in four pharmacies out of the total pharmacies (44.4%) the job description was maintained and reviewed. One pharmacy was found to have no job description at all.

The supporting pharmacy staffs such as technicians and assistant pharmacist have an important role in the dispensing process. The supervising pharmacist must assess their qualification and skills and improve them by providing new training courses. The study found that only in two pharmacies (22.2%) the supervisor pharmacist have had new educational programs for training of the pharmacy technicians. In comparison, the National Certificate in Pharmacy (Technician) in New Zealand would be given to a pharmacy technician after finishing a training program in dispensing procedures, legislation requirements, providing advice to patients on the use of their medicines, handling of hazardous substances, body systems, and functions, compounding, pharmaceutical dose forms and accessories, misuse and dependence of drugs, written and oral advice, stock management and professionalism.⁽¹⁶⁾

The regular establishment of the pharmacy and drug committee is one of the major components of the good dispensing practice. The study showed that the pharmacy and drug Committee was regularly established in only one pharmacy (11.1%) while in five pharmacies (55.6%) this committee was not regularly established and three pharmacies (33.3%) the committee was not available. The involvement and the participation of the pharmacy director are essential for the implementation of the good dispensing practice. Authors found the same percentage of regular participation of pharmacy director in pharmacy committee. In four

pharmacies out of nine the pharmacy directors regularly participate in pharmacy committee while in the other four pharmacies there was no participation of pharmacy directors in pharmacy committee. In a study was carried to determine the current activities of hospital pharmacy and drug committees across Canada it was found that the average size of the committees was 11 members, with physicians comprising half the membership. Pharmacists and nurses had equal representation; other members were community representatives, dieticians, quality assurance personnel and/or administrators. The top responsibilities of the pharmacy and therapeutic committee were inpatient formulary management (93% of respondents), drug-use policy making (92%), adverse drug reaction monitoring (83%), patient safety (80%) and drug-use monitoring (80%). Subcommittees were utilized by 46% of pharmacy and a therapeutic committee including antimicrobial (38%), medication safety (25%) and nutrition (14%). Economic evaluations were most frequently

completed by a pharmacist who had some previous pharmacoeconomic experience.⁽¹⁷⁾

CONCLUSION

Since the pharmacists are the key health care providers to promote rational drug use, they should be educated about this topic in order to improve the quality of the services provided in pharmacies. The senior pharmacists in this study were qualified persons, and from a managerial point of view they were controlling the work in the pharmacy with proper supervision and revised policies. Their attendance in pharmacy is also reasonable. Pharmacists in charge work full time, and if a pharmacist is absent for any reason there is another one to replace. There was a good communication between pharmacists in charge and hospitals administration. The dispensing staff was employed by the pharmacy administration and had the optimum level of skills in dispensing, so any newly staff members will have an efficient training that improve their performance.

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