Qualitative Research on Medication Safety among Nurses and Pharmacists in Hospital Miri
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Abstract

Medication safety is one of the integral practices for every healthcare provider. It is one of the major components in health care delivery system because it can cause potential harm to patients. This qualitative study focuses on nurses’ and pharmacists’ experiences and perspectives on medication safety and hope that this study can contribute in safe medications or and improved patient care. The findings indicate that both pharmacists and nurses share a responsibility preventing medication error. Implementing safety practices is paramount and improvement in clinical knowledge may help in their working circumstances.

Introduction

Medication safety is one of the integral practices for every healthcare provider. It is one of the major components in health care delivery system because it can cause potential harm to patients (1). Approximately 106,000 deaths occur annually from medication error and adverse drug reactions (ADRs). In United States, medication error is the number 4 to 6 leading cause of death and over 2 million of serious ADRs which defined as requiring hospitalization, causing
permanent disability and death occurs each year. In 2009, 2572 cases of medications which were mainly adverse event issues were reported in Malaysia. It has serious direct and indirect result and usually the consequences of breakdown in a system of care. Not only death or disability, it causes emotional impact to the patient according to Study conducted by the Institute of Medicine (1999), entitled “To Err Is Human: Building a Safer Health System”. It is estimated that medication errors cause over 7,000 deaths annually. In Malaysia, the Malaysian government does emphasize on the medication safety whereby the government encourages researchers to conduct research on medication safety (1).

Medication error can lead to patient morbidity or mortality and even cause emotional impact to patient. Incorrect medication, labeling and negligence when giving medicines are among the common mistakes that have been detected. Institute for Safe Medication Practice (ISMP) newsletters are recognized as some mostly updated and comprehensive medical alert systems are widely used over the world to create awareness on medication safety. In Malaysia, there were efforts taken to create awareness on medication safety. Few examples like the arrangement of medicines by colour coding and a “5S management system” which were implemented in most of the hospitals. There was also the Guide on Handling Look Alike, Sound Alike Medications, which included the strategies to prevent errors with medicines. A “Know Your Medicines” programme was introduced to educate the public (2).

Medication safety plays an important role as with the increase in use and grow of the pharmaceutical industries have brought to the increase in hazards, error and adverse events which has significant impact on patient outcomes and healthcare costs (3). Besides that, medications have also become more complex with massive increasing in the number and variety of medications available and even one single medication that has different routes of delivery. Furthermore, increasing number of doctors lead to the process of delivering medications to patients are often shared by a number of doctors and these causes communication failures and lead to wrong medications given. Doctors have a major role in the use of medicine. Their role includes prescribing, administration, monitoring for side-effects, working in a team and potentially a leadership role in the workplace in relation to medication use and improving patient care. Inadequate knowledge about drug indications, contraindications and drug interactions has become an increasing problem as the number of medicines in use has increased. It is not possible
for a doctor to remember all the relevant details necessary for safe prescribing. Therefore, nurses and pharmacists should work as team with the doctors to identify any medication errors (3).

Knowledge of nurses’ and pharmacists’ experiences and perspectives are important in modifying safety practices (4). Therefore, this study aimed to know more about nurses’ and pharmacists’ experiences and perspectives on medication safety and hope that this study can contribute in safe medications or and improved patient care.

**Methods**

**Setting and context**

The study was conducted at Miri General Hospital, Sarawak. This hospital has 340 beds which have several specialty wards such as Medical, Surgical, Eye, Orthopedic, Gynecology, Radiology, Anesthesia, and Pediatrics. The ward equip with treatment room where medications are stored and prepared for administration by nurses. Physicians prescribe medication through a prescribing medication chart which is handwritten by the prescriber himself. All prescriptions and administrations are documented in a paper-based medication administration file. Each nurse has a designated group of patients for whom he/she prepares and administers medications.

Pharmacy Hospital Miri consisted of several main components, such as Procurement and Supply Service, Outpatient Service, Inpatient Service, Pharmaceutical Production Service, Drug and Information Service, Ward Pharmacy Service, Clinical Pharmacokinetics Service, and Cytotoxic Drug Reconstitution Service, and does provide other professional services like medication therapy adherence service as well.

**Participants**

We performed a qualitative exploratory study in 4 nurses and 4 pharmacists. To obtain a broader perspective on the subject from the management as well as the operational level, we utilized purposive sampling aimed at a high level of heterogeneity. Initially, 2 nursing managers of U40 and U36 were approached by the two researchers, with requests to participate in a study
on practices to improve medication safety. Purposeful selection was then applied to select the remaining 2 other nurses from different departments, varying levels of training and seniority as well as different attitudes towards medication safety practices. Selection of pharmacists was similar, with interviewing 2 highly ranked pharmacists of PFU48 with experience in Outpatient and Inpatient Department, and selection of 2 pharmacists with varying experience and specialties similar as the method mentioned above. To be included in the study, participants were required to be registered nurses and pharmacists.

**Data collection**

A total of 4 pharmacists and 4 nurses were approached, and all participated voluntarily. All participants received verbal invitation and an email explaining the purpose of the interview, the process of interview and the guarantee of anonymity. Written informed consent was obtained from all participants prior to the interview. Participants were reassured that the aim of the study was to obtain the nurses’ and pharmacists’ personal perspectives and opinions on, as well as their experiences with, medication safety policies and practices.

Semi-structured individual interviews (n = 8) was conducted, with each interview lasting approximately 10 minutes or more. The semi-structured interviews allowed the participants to speak freely with structured guidance from the interviewer using a topic list.

**Data Analysis**

Dialogues from each interview were fully transcribed verbatim stored electronically as Word files. After that, the primary analysis was done using a low-technology technique with printouts, scissors, and crayons. Four of us (YW, HM, El, and JC) were involved in the analysis using each analyst coding scheme. All quantitative analysis of the coding was done manually or with a calculator.

Meeting on coding and consensus was performed where the codes were compared, debated differences of opinion, until consensus on a coding tree was reached, and the most relevant themes related to nurses’ and pharmacists’ experiences and perspectives regarding
medication safety were identified. Finally, the text fragments were sorted and analyzed according to the identified themes. Repeating themes were identified and findings subsequently summarized.

Current research practice and legislation in Malaysia do not require an ethical approval process to conduct such a study. The data collection was completely anonymous (in accordance with the Data Protection Act), and participation was voluntary.

Results

We have interviewed 4 pharmacists and 4 nurses from different level of management in each department. There were similar responses when it comes to concept of medication safety but different opinion regarding exposing medication safety to public.

Three specific theme were emerged from the analyzed material: (1) Baseline knowledge on medication safety in pharmacists and nurses, (2) Pharmacists’ and nurses’ roles and responsibilities in medication safety and (3) Pharmacists’ and nurses’ ability to work safely in Hospital Miri

Baseline knowledge on medication safety in pharmacists and nurses

Pharmacists and nurses have the same basic concept on medication safety, which is providing and serving the correct medication, with the correct dose, frequency, and route.

Sister and staff nurse indicate that they have been following 7R policy as their guidance to medication safety practice.

“7R include right patient, right medicines, right timing, right dose, right route of administration, right documentation, and lastly patient’s right to refuse” (SN1) (SN2)

Identifying side effect of medication was also important as indicated by both pharmacist and staff nurse.
“Supplying the right medication to the patient, with the correct dose and frequency, and
being aware of possible side effects. So that when the medication is taken, The patient is
able get maximum benefit from the medication but minimal side effect” (P3)

Pharmacists’ knowledge on medication safety in Hospital Miri were mostly build up by
attending medication safety talk organized by DIS (Drug Information Service) department.

“For our pharmacy side, we also have our medication safety talk in our own CPD
(continuous professional development). So to increase the awareness for all the pharmacist
and also the pharmacist assistance” (P2)

On nurses side, their knowledge were based on medication safety courses, where they will
be sending batch of staff nurse at a time for the course which were held 3 times per year, and
also during CNE( continuing nursing education) talk.

"We did one CNE every Thursday, combine from Isolation, Male medical, and Female
medical ward, we will mention about medication safety if we have case." (SN2)

**Pharmacists’ and nurses’ roles and responsibilities in medication safety**

*Responsibility*

Both pharmacists and nurses have the same opinion on our responsibility to have the correct
attitude and being vigilant when handling medication.

"If those PRP or FRP including me are not familiar with medication, we can go and double
check with other colleague to ensure that I’ve dispensed the correct medication" (P2)

“The most important thing is the attitude of staff themselves. We must concentrate at work.
Use the knowledge we have, don’t use short cut.” (SN1)
Pivotal role

Pharmacist’s role in assisting doctor and nurses especially in ward is well appreciated as mentioned by the staff nurse.

“It’s very useful actually if there is a pharmacist in the ward. And there is one, so it’s very useful” (SN4)

But when intervention was not corrected in time, pharmacists indicate that staff nurse can help in clarifying the dose or route of medication if it’s not appropriate.

“Some of the houseman they prescribe the wrong dose, because the carbon copy of the script arrived later to Satellite pharmacy, so the wrong dose was actually served to the patient before it was intervene by pharmacist. So sometimes senior staff nurse can actually play a role before they serve the medication to the patient.” (P2)

Pharmacists' and nurses' ability to work safely

Pharmacists' and nurses' ability to work safely were influenced by 1) risk awareness on medication and 2) circumstances in which they are coping with.

Risk awareness

Awareness on the risk of medication error varies among pharmacist and nurses. Both sides gain their knowledge from courses attended, incident report, and personal experience. Their opinion on causes of error was the same: lack of knowledge and experience.

"I feel that experience and knowledge about the medication is very important. If at the first point I know that fluconazole has two strength and then I won’t supplied the 100mg capsule to the patient with the 50mg dose, just that I don’t know. That’s why it’s lack of experience and knowledge about the medication.” (P3)
"If i will say for nurses, maybe lack of experience. The one that are juniors, they are not alert regarding the dosage, for example the Panadol.” (SN4)

Both professions indicate that the way to overcome this issue is to have more training and to have senior leading the juniors.

"Sufficient training for the pharmacist and by attending more courses, I believe, these will improve the condition” (P1)

"One more is when the staff nurse serve medication, a senior must accompany a junior. That’s why A is to serve, B to witness" (SN1)

Circumstances

Work pressure and work environment influence both pharmacists' and nurses' ability to perform well. They share the same trouble in concentrating on their work when the working environment become hectic and lack of staff assisting.

"We are still lack of staff in ward. One to follow doctor’s round, one to serve medication. When doctor ask for help on other procedure, that can also lead to medication error." (SN1)

"Sometimes we just have a peak hour where people are overload, too busy so they (pharmacist) tend to make error." (P2)

Forgot or late administration of medication was perceived to be a medication error commonly seen in Hospital Miri. Sisters indicate that factor leading to this is the attitude of some staff nurse when handling the patient's medication and handing over to the following shift staff nurse.

"Because during specialist round, they decide to withhold dialysis, then suppose the medication to be after HD, Then if patient did not went to HD, staff nurse will expect people in the morning have already served. If ordinary day they serve in morning. But dialysis time
they serve after dialysis. When there is such routine, some staff are not alert. Attitude is the problem." (SN2)

As for pharmacists, they share the same concern that similar packaging and location of similar medication can lead to confusion and ultimately lead pharmacists to medication error.

"Arrangement of the drug is also quite important, because you see like amlodipine 5 and 10, if you put at the same area, like neighbors, some people will also mislook it, like if you want to take 10 then you accidentally took the 5." (P4)

Discussion

Both pharmacists and nurses each plays a pivotal role in this multi-disciplinary team to provide safety in handling medication, which extends the responsibility beyond supplying, preparing and administering medication as prescribed. For pharmacists, besides supplying medication to patients, also takes up the role in identifying drug-drug and drug-food interaction and educating patients in knowing their medication with the 5R concept. Studies have shown that through patient education by pharmacist, internal and external ADE reports has decreased substantially and patients’ adherence to medication improved. (5, 6). However, in relation with medication prescribed in ward, nurses, apart from clinical pharmacist are crucial in coordinating the care of patient with their clinical reasoning as they have the closest interaction with patients and doctors. Others studies also supports the need of nurses’ clinical reasoning and the coordination of care together with physician and pharmacist in medication management and safety (7, 8).

In Hospital Miri, both nurses and pharmacists agree that lack of experience and knowledge is one of the main causes of the medication error. A study conducted at one of the hospitals in East Malaysia also support their opinion, stating that medication error are more likely to occur during first 5 years of working (9). Therefore, baseline knowledge of medication safety in pharmacists and nurses are essential in order to work as a team in medication management and safety. Evidence from other studies shown that more attention are required to improve basic as well as continuing education of nurses and pharmacists on medication safety.
Both side gain their knowledge and risk awareness through experiences, courses and talk organized by each profession. Inter-professional collaboration through knowledge sharing and case-based discussion enable both professions to strengthen their medication safety knowledge.

Knowledge and experience associated with medication administration and error occurred emphasizes the need to apply safety practice in daily routine. Adherence to medication protocol is more likely when the medication is perceived high risk, unfamiliar, and causing confusion (11-13). Therefore, in order to avoid errors, guideline and protocol drafted by Malaysia Ministry of Health and policy drafted by hospital are implemented. Nurses in Hospital Miri adhere to 7R protocol in ward and double-checking medication to avoid error during medication administration. Pharmacists on the other hand follow standard operation protocol on dispensing developed by pharmacy department and double-checking on medication before supplying medication to reduce the medication error.

However, error does occur even though both health professions state that the safety measures (eg double checking) are feasible in Hospital Miri. There are a few papers stating that some safety measures are not feasible in daily practice even though they have shown to be advantageous on reducing error (8, 14). Work environment, human attitude, and the work pressure seem to be the main problem face by both professions. With hectic environment, lack of staff assisting, high working target set by higher authority, and working pressure build up tends to cause both professions to lose concentration and affect their ability to perform their work safely. To improve the environmental aspect of medication safety, nurses state that allocation of a nurse solely to serve medication and creating awareness of the consequences of interruptions are necessary.

In the pharmacy, medication with similar wording or packaging place at a close distance can easily confuse pharmacist, which further affects their ability to perform their role. Adhering to look-alike, sound-alike guideline and 5S guideline designed by Ministry of Health Malaysia on arrangement of medication will surely reduce the environmental factor contributing to error in pharmacy side.

**Strength, Limitations and Future Research**
This study has provided a good opportunity to explore and investigate the topic of medication safety from two of major professions related to it. Valuable pieces of information were extracted and found consistent with other papers. Nevertheless, the study has been conducted with no bias. Limitation to our study is that doctors were not recruited. Suggestion for future research of this topic would be to recruit doctors, nurses, and pharmacists from different levels, to extract different view of opinions.

Conclusion

Medication error is a substantial problem face by healthcare professional team. This study shows that both pharmacists and nurses share a pivotal role in preventing medication error. Other than implementing safety practices, both professions are required to have sufficient clinical knowledge to be applied in their working circumstances. Management team for nurses and pharmacists are crucial in creating a safe environment for practice with inter-professional collaboration and continuing professional development focusing on patient’s medication safety.

Reference:


