CHAPTER 1
“The hard part of teaching is not getting students to learn content; the hard part is getting them to learn how to learn and generate creative solutions”

Wankat and Oreovicz (1998)

Introduction

Administering medications to patients remains one of the most important—and legally most risk-filled-aspects of nursing practice today. Nurses are responsible not only for the medications that they administered but also for the administration of medications that they direct others to give. Liability, for a failure to act that causes harm to another is an important aspect in the nurses' accountability for medication-related activities. Studies have shown that a frequent cause of malpractice suits is related to drug errors, many of which are easily preventable. Patient education and health teaching continue to grow in importance as a result of much needed concern for wellness maintenance and preventive care measures. Therefore in carrying out the task of medication administration, nurses are subject to a range of practices and procedures which are dictated through legal, management and medical requirements to ensure safe administration of medications.

In hospital settings, where nurses have primary responsibility for medication administration as a part of disparate and demanding set of patient care duties, the concern about medication safety is paramount. The medications are prescribed by the doctor and dispensed by the pharmacist, but responsibility for correct administration rests with the nurse. Each registered nurse is accountable for her own practice. This practice includes preparing, checking and administering medications,
updating their knowledge on medications, monitoring the effectiveness of the treatment, reporting adverse reactions and teaching patients about their drugs is an integral part of a nurse’s role. Medication errors are persistent problem associated with the nursing practice. Nurses ought to follow the rights of medication and failing to do so leads to errors in medication. Though repeatedly taught and practiced, medication administration is an activity that is prone to errors, in part because of the proliferation of new devices and new drug products. Medications are administered through variety of routes, dosages, dosage forms, dosing regimens, adding intricacy and variability. Medication orders are changed very frequently based on the changes in patient’s clinical status and diagnostic findings. A number of definitions exist as to what constitutes a medication error. The American Society of Hospital Pharmacists (ASHP) have defined medication errors as ‘a dose of medication that deviates from the physician’s order as written in the patients’ chart or from standard hospital policy procedures’. Wolf defines medication error as ‘mistake associated with the drugs and IV solutions that are made during the prescription, transcription, dispensing and administration phase of drug preparation and administration.’ Medication errors are a multi-disciplinary problem and a multi-disciplinary approach is required to reduce the incidence of errors. It can cause devastating results for the patient, nurses and the institution at large. Miller in her study states that out of total medication errors, 41% were the administration errors and 6% documentation errors. A literature review done by O’shea reveals that the factors contributing to medication errors were mathematical skills of nurses, nurses’ knowledge of medications, length of nursing experience, length of nursing shifts, workload and staffing levels, nursing care and
medication delivery systems, policies and procedures, distractions and interruptions and quality of prescriptions.\textsuperscript{3} Hence the above reviews have shown that medication errors occur at all levels and in order to minimize the medication errors, the nurse educators and administrators needs to establish medication administration policies and procedures regularly and also to make procedures available for students to constantly practice in order to reduce errors and enhance patients understanding of their drugs.

In spite of best preparations, efforts and intentions, sometimes medication errors still occur. When this happens, it is necessary to have a process in place to examine what occurs and address a finding which is one of the organization’s total risk management program. The key aspect of risk management program is the identification of nurses’ skills and competencies relative to medication administration. Competency assessment is a recurring theme in health care organization today particularly in the light of ever increasing emphasis on prevention of medication errors, appropriate patient assessment of their understanding and safety.\textsuperscript{6}

A study conducted by Irene in Canada on nurses’ competencies, assessed the level of knowledge, skills and clinical judgment required of a nurse who administered medication to patients in two hospitals. A total of 163 patients were included in the study. The physician’ prescriptions of these patients approximately 900, of 50 drug classifications. The results showed that the nurses were not competent to administer and monitor between 58-71 different drugs of each unit. They were not aware of the potential drug interactions involving 47% - 66% of the medication across the unit.
Drug administration competencies require a broad knowledge of pharmaceuticals, client’s health status and their understanding of the regimen for their health problems. The researcher strongly recommends that programmes or resources need to be accessible to all health care professionals for repeated learning to reduce errors of medication.7

World Health Organization (WHO) states that the education of nurses and midwives should be competency based. In doing so it is in harmony with a growing and worldwide emphasis on the use of this approach to education of health care professionals. Health care systems are facing rapid expansion of knowledge. So it is necessary to improve quality of health care professionals. In many countries it is acknowledged that, it is essential to assess and reassess regularly the relevance of education and training to all professionals. It is also required, to ensure that the graduates are competent to meet the changing needs of the people of the country at present and in future.8 Hence competency programmes focuses on what a learner can do as a result of participating in the training.8 The assessment of competency is crucial to drug administration. This is the time when the learner demonstrates to a quality workplace assessor, their competency in a task to a required standard. Therefore medication administration is a core function of nursing practice, where the nurses must possess good knowledge and skill in administering medication. In most of the institutions the nurses require to pass the medication administration competency test before administering medication to patients. Medication errors are considered to be serious offence committed by the health care personnel. The nurses are totally held responsible for the medication errors. Though the basic procedure of
administering medication is taught in the first year of their nursing, the students lack complete knowledge regarding pharmacology as the subject is taught in second year. By the time the students are placed in second year they are expected to understand disease process and apply their pharmacology knowledge and also abide by the policies and procedure. Due to this gap of knowledge and practice, the students lose motivation in following complete procedure or the protocol to administer a medication. Hence medication errors exist in all the organizations in varying intensities.

Study carried out by Padma et al observed that 25% of patients who take one or more prescription medications will experience an adverse drug event within three months of which 39% of these are preventable.9 Among the 1,821 patients who were admitted in the hospital during Oct 2003-April 2004 who had 65 ADRs reported from 51 patients (2.8% of hospitalized patients). Hence one in 10-20% patients experiences ADR. Another study conducted by the Harvard Medical Practice found that 30% of patients with drug-related injuries died or were disabled for more than six months. Medication errors account for 7,000 death each year in the United States (U.S) alone.10

Interviews with 7 nurses, 4 nursing technicians and 23 nursing auxiliaries in Brazil on drug errors and its consequences through incident report brought out the importance of medication errors that need to be reported so that their causes, rates and consequences in hospitals can be observed. Medication error is an indicator for the improvement of the hospital system and care quality.11
Reducing medication errors is a process of continuous quality improvement. The journey from the pen to the patient is a long one and filled with multiple areas where errors can creep in. The delivery of medical care like all other systems is safe only when human error is recognized as an inevitable consequence and systems are streamlined to minimize adverse consequences. Hence the investigator focuses respiratory drugs and administration of these drugs by nursing students in the structured scenario using Active Lecture cum Live Demonstration (ALLD) and Active Lecture cum Video Learning (ALV) to enhance their competency programme on drug administration.

Today the nursing graduates in their second year of nursing programme study the subject pharmacology in order to understand the common treatment provided for system health problems of clients at large. They are taught in the classroom by the pharmacology experts and the practice of drug administration is supervised by the nursing supervisors in the clinical areas. Therefore, what is taught in the classroom and what is being seen or experienced in the clinical area seems to have a gap in their comprehension and skills. Hence, students are confused and usually avoid drug administration which generally brings down their level of expertise or if given taking a chance, then errors are expected either minor or major in nature. Problem arises in their practice as there are different issues related to the patient or drugs and this complexity poses the student to great risk in their nursing practice.

Eventually, most of the classes delivered in the present classroom seem to utilize lecture cum discussion as the major form of teaching learning for the rising
number of students in a classroom. Nursing being a practicing profession requires ample amount of demonstration by the clinical instructors for effective nursing care but demonstration alone by the teacher may pause unfairness due to inequality in the instruction. Hence the researcher thought learning through video for drug administration would improve the students’ skills by repeated presentation and practice to attain confidence and ultimately reduce medication errors within this changing environment besides the usual lecture cum discussion. When the 60 students of second year B.Sc. nursing, Manipal University were asked about their learning experiences of pharmacology subjects in their classroom, the students expressed their difficulty in understanding the mechanism of the drug action, large number of topics for exam at a time, difficulty in remembering their names, uses and side effects and also expressed their concern over lecture method alone as a method used to teach these students.

Behaviorist and cognitive psychologists describes approaches to learning in two quite different ways. The behaviorist approach to learning- focuses on how the presentation of the material influences the behavior. It determines the relationship between nature of the stimulus that is presented to the learner (instructional manipulations) and the nature of the responses or outcome performance.\textsuperscript{11}
Performance in internal exams of B.Sc. second year nursing students’ of Manipal University for the academic year 2005-2006 reveals that, in the subject pharmacology a total of 17(28.33%) students failed in sessional exams. The range of marks obtained by the students range from 5-35 out of 40 marks. During the 2006-2007 sessional exams another 19(19%) students had failed to pass their pharmacology subject and the range of marks obtained by them was 5-32 out of 38 marks. Although there was a rise in the 2006-2007 pass rates, yet the range of marks obtained did not exceed the maximum marks obtained during 2005-2006. This clearly indicates that the lower range achievers need to be boosted up to score better in the future to enhance clinical skills to enhance better patient compliance through their clear understanding of the drugs based on variety of learning approaches.

With the turn of this century, modern pharmacology focuses on supportive learning through novel teaching approaches like small group discussion, structured role play, Computer Assisted Learning (CAL) in medical education of pharmacology. The old concept of teaching ‘know all’ has to change to ‘know how and why’ with the emphasis on active learning. CAL learning with Audio-visual aids had great impact on students learning pharmacology.12

The main challenges of pharmacology teacher teaching pharmacology is transforming students’ perception of pharmacology as an extensive amount of drugs to know and remember to an interesting and essential subject to enhance competency in clinical skills. In this regard the investigator has chosen respiratory unit drugs for the teaching purpose from the prescribed syllabus of B. Sc. Nursing
second years which is as per the Indian Nursing Council. Compliance of patients are seemingly low among patients who have respiratory problems due to its long treatment course or due to their lack of understanding. To prove, India is the highest TB burden country in the world, accounting for 1/5th of the global incidence-an estimated 1.9 million cases annually. The revised National TB control program (RNTCP) has completed its 10 years of implementation. The RNTCP strive to achieve its objectives of TB control, yet it is facing several challenges, foremost being the threat to drug resistance. The problem of drug resistance has been further compounded with the emergence of extensively drug resistant TB (XDR-TB), which is a subset of MDR cases additional resistance to key second line drugs leading to extremely poor outcomes. XDR-TB is reported from all regions of the world and it has been classified by WHO as a serious emerging threat to public health in India.

On the other hand Bronchial Asthma is a disease that is becoming a major issue in India. Many factors have contributed to the rise such as air pollution, fast modernization, and widespread construction work are some of the reasons for asthma to thrive. The situation is complicated by poor access to medical services, high price of effective drugs, and poor health education for these clients.

Almeida in 2000, reports that suffering due to asthma continues to increase despite excellent treatment available. The key to successful asthma management is correct diagnosis at the right time and regular follow up and most important is client education about the disease and how to comply to its regimen. The morbidity associated with asthma is dramatic. Despite growing knowledge and technology, the
incidence of asthma increased 60% since 1980s and only \(1/10^{th}\) of the patients are under medical treatment and the rest silently suffer due to lack of awareness, leading to an increase in mortality rates.\(^{17}\)

Arguder describes that Quality of nursing care is based on individual needs of the clients in respect to their treatment regimen. Encouraging their participation towards achieving their own restoration and rehabilitation, promoting independence of thought and action is the key factor.\(^{18}\) To achieve this, teaching the client all about the medications that they receive in the care aspect is a must to comply with the therapy and to improve their quality of life.\(^{18}\)

The above two major health problems mentioned are chronic diseases that requires strict drug regimen. Hence the clients are invariably sent back home to continue their drugs for a period of time and even may have to take lifelong. The drugs given to them are either taken orally or by inhalation and also some techniques to note their severity for apt medical assistance. Therefore teaching these clients while in hospital is the prime duty of the nurse to make their patient independent of their care and also report to their doctor or nurse about the effect of therapy or change of treatment regimen.

Nurses at different levels have the responsibility to shape a health system that provides quality care and better treatment outcomes. The five major barriers to adherence often are lack of awareness and knowledge about adherence, lack of clinical tools to help health professionals in evaluating and “treating” adherence, lack of behavioral tools to help patients develop or change their habits, lack of appropriate
provision of care for chronic conditions, and dysfunctional communication or relations between patients and health professionals.\textsuperscript{21}

Education and training on medication administration need to be conducted on an ongoing basis in educational institution to keep the students safe and ensure ongoing competency. It ranges from formal classroom lectures to one-to-one discussion, and it must be procedure specific, competency based, technical and theoretical sessions. The procedures should be demonstrated by the teachers who are well verse with the procedure. Teaching learning sessions about medication should include institutional policies, verification procedures, protocols, equipments, the seven rights of patients of medication administration and infection control measures (hand washing). Medication administration procedures are an excellent method of testing competencies. Hence educating the clients through a nurse who is competent in her drug administration will help client adhere to the treatment regimen, reduce the complications of incomplete treatment and will be able to bring about good quality of life to patients suffering from respiratory disorders and also will be able to make the students inculcate critical thinking, clinical reasoning and decision making capacity regarding drug administration which is a major subject in their early year of nursing profession. Hence the researcher intended to compare the effectiveness of two teaching learning methods (ALLV and ALV) in learning pharmacology.
Statement of the problem

According to the report of Lynn L Chilton of University of South Alabama, it states that there are 44,000 to 98,000 individuals who die every year in hospitals due to preventable medical errors. Thousands of patients are affected every year with some form of adverse drug reactions or medication errors either fatal or non-fatal. The patient not only bears the cost of errors or death, but also is affected by psychological and physical pain, and also financial burden. On the other hand the medical and nursing team gets its negative impact of the errors by lowering patients' trust and satisfaction in the health care members and the institute at large.

Therefore training the nursing students who are the pillars of tomorrow’s health care team is the best way to solve the problems of errors and educating the patients about their medication will help comply to their treatment regimen. Hence, developing varied teaching learning methods to enhance students' understanding of pharmacology, the most feared subject by nursing students will create a new sense of confidence in their nursing practice and thereby improve the quality of care and self-reliance of the patients with chronic health problems.

Purpose of the study

Medication administration is one of the most common nursing activities and a highly responsible task of nurses. The proposed study aims to examine and compare the outcome of two approaches of teaching pharmacology to UG nursing programme, in terms of the development of students’ competency in administration of drugs. The ultimate focus is to prepare competent nursing professionals, who would be able to
influence patients’ drug compliance, thus preventing complications of incomplete treatment.

**Objectives of the study**

1. To develop two teaching learning modules - Active lecture cum live demonstration and Active lecture cum video demonstration.

2. To compare the outcome of two teaching learning modules in terms of UG (Under graduate) students’ competency in drug administration.

3. To determine the influence of students’ competence in drug administration on the patients’ understanding to drug therapy.

4. To obtain UG nursing students’ opinion on the Active Lecture cum live demonstration and active lecture cum video demonstration form of learning.

5. To correlate between the students’ competence in drug administration and their performance in pharmacology in the second year university examination.