

Case Based Scenarios: Evidence Based Teaching Learning Strategy in Nursing Education Pharmacology Course

Zulekha Saleem¹, Nishat Tabassum² & Nimira Asif³

Abstract

Medication administration requires comprehensive knowledge about drug dosage calculation and its related knowledge. In order to build this skill, the curriculum of nursing education includes basic mathematics, drug dosage calculation and a pharmacology course. In our nursing school, during the BScN year two semester II it was identified that few students are encountering problem related to these courses and thus they are not scoring well although it is expected to get 100% in mathematics and drug calculation whereas 70% passing grade is needed in pharmacology. Case based scenarios were planned as a strategy to support the students' learning. The faculties planned scenarios with integration of pharmacology and drug calculation and prepare some reading material to be send prior to the tutorial. This helped in improving the score of the student. At the same time some challenges were identified that scheduling at the mid of the semester is difficult due to booked venues and faculty hours. Therefore, scheduling extra time for tutorial increased workloads for faculty and students, students at times were not coming prepared for tutorial day. It is advised that such remedial strategies shall be consider in the planning phase of the semester, use of ICT will help in self-directed learning and continuous development of scenario shall be practiced.

Keywords: Case based scenarios, remedial classes, integration of drug calculation and pharmacology

Introduction

Administering medications to patients in clinical setting is always complex and challenging role for nurses. The role of nurse in administering medications to patients includes; administering drug safely with maintaining five rights, monitoring desire effects and side effects and providing education and discharge teaching.

¹Instructor, Aga Khan School of Nursing, 0333-3049737. Email: zulekha.saleem@aku.edu

²Senior Instructor, Aga Khan School of Nursing. Email: nishat.tabussum@aku.edu

³Senior Instructor, Aga Khan School of Nursing. Email: nimira.asif@aku.edu

This nurses' role requires comprehensive knowledge about the drug categories, medication calculations, specific side effects, adverse effects and nursing care with scientific rationalization. The process of learning pharmacological concepts initiate from the nursing schools where nursing students are prepared for the application of learned concepts in clinical setting (Meechan, Victoria & Catling, 2011). However, as a nursing faculty it is observed that some nursing students experiencing difficulty in comprehend pharmacological concepts and drug calculation in clinical setting. This is evident from their course assessments and also while practicing medication administration at clinical setting. The studies evaluated that pharmacology and their calculations knowledge among nurses are limited. One of the study indicated that nursing students only memorise the pharmacological concepts and their calculation which may impact on patient safety at clinical setting (Manias et al., 2002). To reduce the gaps between theory and practice a new initiative Case based tutorial were introduce as a strategy which is expose the students pharmacological concepts with case scenario and it is the student oriented (Coyne, Needham, & Rands, 2013). As a first time implementation this strategy is used for the specific students those are unable to comprehend their pharmacology knowledge and score low in the pharmacological initial two assessments.

This paper aims to describe the implemented case based tutorials by the nursing educator in a private nursing university to enhance student's pharmacology concepts and with integrated Maths calculation through case based learning.

Background

Pharmacology course in nursing education mandatory for all students entered in bachelor in nursing. This course is offered in under graduate students in BScN year II. Mathematics course offered in BScN year one program, which is pre requisite for pharmacology course which they study in year II. Basics Mathematics is essential in drug and dosages calculations as accurate drug calculation is the basic part of the nursing profession. This course help nurses to calculate appropriate amount of drug dosages in clinical setting which eventually leads to enhance patient safety. According to the curriculum when students move to year II they integrate learned basic mathematical knowledge with pharmacology course in which they relate dosages and calculation while learning different drug categories in pharmacology concepts.

The integration of both courses at BScN year II have increased students' knowledge about drugs, their classification, therapeutic effects, expected reactions, toxic effects, and nursing care. This integration takes place when students learned same drug category calculations in separate class of maths. Both courses are evaluated with same assessment criteria. In addition to that, at the beginning of semester these courses are also aligned with pathophysiology and Adult Health Nursing. This course also emphasis the application of learned theoretical concepts in specific patient care situations (in all the clinical base courses) through assessing, calculating drug dosage, verifying physician orders, administrating, documenting and evaluating the outcomes of the drugs.

Each semester comprises of 18th weeks including final exam week. Three quizzes are placed at four weeks interval as a part of on-going assessments. These quizzes include concepts of pharmacology and related drugs calculations. As a part of summative evaluation a final exam is conducted at the end of semester. The criterion to pass this course is 70% as per the university policy. It is expected from the students to be prepared for memorizing drug names, actions, side effects, interactions and relate the nursing care. Moreover, they have to attempt smart and quick drug calculations. However, it is observed that some students (15% to 20%) did not meet the criteria in a part of on-going evaluations as they are not able to grasp the pharmacological concepts and drug calculations skills. This information retrieves after discussion low scoring students, to know the reason of their low scores. Then it was discussed among the team of faculties and case based tutorials were planned first time in this course. Through this strategy we helped them to memorize and integrate pharmacology and drug calculation concepts. These tutorials were placed in students' study time of regular weekly schedule after every on-going assessment. These students were prior informed about the topic and time about the tutorial so that they plan their activities accordingly.

Pharmacology Learning with Case Based Tutorials

As discussed earlier who score low in pharmacological and drug calculations skills were placed for case based tutorials for close observation and proper attention in small group. Studies observed that in a smaller group case based tutorials, helps students better communicate their problems and difficulties with each other which clarifying their pharmacological and mathematical concepts (Glaister, 2007; Greenfield, 2007).

This format helps the educator to evaluate student's cognitive learning throughout the process. Literature also revealed that realistic case studies provides students with a broader sense of what is required with medication administration in the clinical context (Meechan, Mason & Catling, 2011; Greenfield, 2007). So this pedagogy helped the learner and educator to achieve the set objectives of the course and also help learner to effectively integrate the knowledge and calculation skills in clinical placement. On the other hand it also helps the educator to guide students' according to their identified needs of learning (Coyne at al. 2013).

Implementation

After quiz 2 total 4 cases based tutorials were conducted for 20 students. All of them attended these tutorials. The objective of these tutorials was to create understanding of different cases which were similar to the cases asked in the examination to improve their grade. Case based tutorials students study time was utilized from the semester schedule. Case based tutorials were prepared by the faculties for students in which scenarios related to pharmacological and drugs calculation integrated concepts are prepared, and reviewed by the adult health nursing team for conceptual understanding and other feedback. The faculty emailed the tutorial topic, reading materials and objectives of tutorial to the concern students a week prior and it is expected from them to come prepare for the given topic, which includes pharmacological knowledge, calculation of basic mathematics concepts and drug calculation formulae in order to generating discussion among the group. This process also enables the students to share queries and concerns of their own understanding, which they are unable to share in a large classroom format. During the case based scenario the students integrated learnt knowledge in the given scenario and also demonstrate drug calculation for the specific category drugs and check the answers among themselves. This also enhances the group collegiality and peer learning. In this regard, Papinczak, Young and Groves (2007) also affirm that peer is a valuable learning experience for students.

Role of Educator

On the day of tutorial, both the faculty of pharmacology and mathematics observe the group and direct their learning for pharmacology and drug calculation integration. They also identify those students who are needs more attention and feel shy to share their work among the group, due to fear of being wrong.

During the session faculties provided more questions on drug calculation according to the topic selected for the tutorial. This type of 'on the spot' assessment, gave idea to the educators about thorough preparation from home. They provide feedback on the performance in the tutorial to the students at the end and faculties also analyse the trend of the student progress. It was also important for the educators to report the progress of each student to the BScN coordinator, after two tutorials. The educators also spent their time in preparing pre-reading material and developing more drug calculation quizzes for the students' learning about pharmacology and drug calculation.

Challenges

Planning for the case based tutorial had a lot of challenges for the educators. As it was the first time when we thought of arranging tutorials for students with special needs of learning, the incubation period took very long. This included the proposal development till the approval phase

Scheduling

We were challenged by the year team for scheduling the time for tutorial, as this semester is loaded with heavy credit courses therefore; taking out time for tutorial was a big achievement. It was suggested to utilize the study time and as it is meant for utilizing the time for learning purpose. Because, it was found from the student advisory team that many of the students spent study time in chit chatting and using social media websites thus, it was planned to use this time effectively for the remediation purpose.

Faculty Time

It required a lot of faculty time to prepare the scenarios and related questions for students in the mid of the semester. Faculty workload increased as they have to put extra time and efforts in remediation. It was then realized by the year team that in the planning for faculty teaching assignment we should consider the time and efforts for helping low scoring students by the faculties. The faculty remained motivated for planning out the tutorials as they know that knowledge of pharmacology and accurate drug calculation are important skills for working in clinical setting.

Therefore, they took out time from lunch hour to execute the case based scenarios in this case. As a result of this strategy students scoring were gradually improving which cherish faculty efforts.

Students' Preparation

As discussed earlier that students were supposed to pre read the material which was provided by the faculty through emails. However during implementation phase faculty faced the challenge that despite giving pre reading material some students was not coming prepared for case based tutorial. The reasons which were identified were: added workload of students, managing time with other courses assignments and assessments and no niche to read. Such students were also referred towards advisory team for motivation and planning the schedules. This collaboration of faculty and advisory team helped the students to improve in the preparation phase of the tutorial.

Recommendations

The science of nursing education is always related to bridge the gap of theory and practice. The course of pharmacology and mathematics were previously taught in the nursing school but the amalgamation of both the course help students to integrate the concepts well in calculating the drugs and simultaneously knowing about the effects of it. The designing of case based scenarios for challenging students in the mid of the semester was an innovative idea, catching up with remedial classes for students and faculty was challenging however, it was a fruitful effort to raise the bar of excellence. The lessons learnt during the process added the following recommendations:

Semester Planning

It is important to consider ad-hoc preparatory classes in the planning phase of each semester. The increased workload for faculty and students may minimize the quality of teaching learning principles. Therefore, a proper time allocation and pre-hand information to the students in the beginning is important for overall semester planning by both the entities. The literature also supports that program should be planned accordingly which bridge the gap of theory into practice for graduate or undergraduate courses (Meechan et al., 2011).

Use of ICT

Although it was adaptable to work within the given time of semester for case based scenario but, it require a lot of paper work. Printing cost increased, which can be minimized by utilizing the educational software for example Moodle. Such educational tools help to generate online quizzes, discussions, asking for queries etc. thus, providing more strategies to help the challenging students to learn. This will allow students to work offsite as well which will save the efforts for arranging the classroom set up because that were already allocated in the beginning of the semester. ICT will also help students to manage time; they were already familiar with such software use due to use of social media sites. Thus, they might have to decrease that social time into a fruitful learning experience. The idea of using ICT will provide opportunity to the educators to safe their time as well by keeping the efforts in preparing scenarios and other strategies to enable learning. The time in arranging operational issues, budget and other logistics arrangement can be saved.

Continuous Effort for Preparing Scenarios

The students can be given chance to utilize and demonstrate drug dosage calculation in real clinical setting; this will allow the educator to assess the competency of students well. Therefore, an effort can be made to inform the other course faculties such as faculties of Adult Health Nursing, Paediatric Health Nursing and Reproductive Health Nursing about the students enrolled for tutorial; so that they can assess the students during clinical hours by giving them opportunity to directly calculate drug and integrate pharmacology concepts while on floor with real patients under supervision of faculty. Such efforts will give the chance to the tutorial educators to understand the reason of performing differently on real verses planned scenarios. Any educational programme preparing nurses to undertake a medicines management role should facilitate nurses to optimise medication use and improve health outcomes for patients (Meechan et al., 2011)

Conclusion

In conclusion, this innovative strategy which was utilized for nursing students helped them to learned difficult concepts for drug calculations and pharmacology.

This Learning strategy improved students' results which were clearly demonstrated in their remaining assessment. Moreover, this would also help them in accuracy of medication calculation and integrated the pharmacology concepts. This effort guided the students to show their potential in providing quality care to the patients in clinical setting by integrating knowledge of pharmacokinetics and mathematics. This allowed them to fulfil their responsibility as a clinical nurse who is aimed to provide care and assist in recovery from the disease. On the other hand the educators of the tutorial were also ready to manage such catching up classes with different learning strategies.

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