

A Virtual Learning Environment for Teaching Intramuscular Injection: A Focus Group Discussion Analysis

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Abstract

The teaching of Intramuscular Injection (IMI) is an essential topic for nursing students and consider one of the daily routines job for any nurse. However, the traditional teaching of IMI has shown some limitations to help the students acquire injection skills. Since the advancement of technology available instruments and applications available in the virtual stores, it seems employing an advanced computer technology would be more suitable in the present era, particularly with a large number of students. Content experts among nursing lecturers were invited to discuss the advantages and disadvantages of the traditional teaching method and the need to create an online program to teach IMI in a Virtual Learning Environment (VLE). A combination of structured and open-ended questions based on related literature was used in the focus group discussion to explore different opinions from the content experts. All the participants recognized the limitations of the traditional teaching of IMI and agreed to the need to create an online computer software as an alternative teaching method to teach the nursing students on IMI. Thus, since the traditional teaching method of IMI administration has the limitations, teaching and practicing IMI virtually and interactively would be more appropriate for the nursing program in producing nursing students who are competent in IMI.

Keywords: Focus Group Discussion, Online Learning, Intramuscular Injection, Virtual Learning Environment, Nursing Education, Learning Management System

Introduction and Literature Review

The traditional curriculum in nursing education gives attention to the teacher instead of the learner. Yet, recently there is a model change occurring now, shifting the stress from teaching to learning through using an extra student-centered program ⁽¹⁾. The changes have

focused on the program layout procedure with more considerable attention to the learner, especially in skills, knowledge, and capabilities inside the program. In other words, the attention of nursing education relies on what the students will learn and creating a thriving education climate.

With regards to teaching intramuscular injection, the traditional method of teaching the nursing skills is starting with lecture-demo, return-demo, and self-practice by the nursing students, usually on non-interactive mannequins. It was found that the competencies of nursing students on injection medication administration still lacked during Objective Structured Clinical Examination (OSCE) ⁽²⁾.

The outcome of the traditional teaching method might not have been effective in ensuring satisfactory

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intramuscular skills performance among nursing students⁽³⁾. On the other hand, other studies also have not been able to provide evidence on whether the alternative teaching method could provide a better learning outcome on skills performance⁽⁴⁾.

In view of the intramuscular injection, the procedure is compound and contains additional methods with the pinhole process itself. New multiple available technologies may assist in training future nurses to avoid dangers associated with the erroneous performance of intramuscular injection skills. The focus group discussion was conducted to obtain feedback on the traditional teaching of intramuscular injection and to obtain opinions on the proposal to create computer software to teach intramuscular injection to the nursing student in USM.

Materials and Methods

Setting

The focus group discussion was conducted in the discussion room situated in the Nursing Skills Laboratory of School of Health Sciences of University Sains Malaysia. The university is currently offering both diploma and undergraduate nursing programs.

Focus Group Participants

Participants of the focus group consisted of six senior nurse educators who were involved in teaching and supervising intramuscular injection to the diploma and undergraduate nursing students in the school of health studies, University Sains Malaysia. They were selected by using purposive sampling with criteria such as had experiences in teaching and supervising nursing students on intramuscular injection.

All the participants were aged between 35 to 60 years old. About 75% of the participants had 5 to 20 years of experience in nursing education, and the other 25% had more than 20 years. For clinical nursing experiences, 50% of the participants had 5 to 20 years, and the other 50% had more than 20 years. It shows that the participants were experts both in content and clinical.

Instrument

Focus group was used to gather qualitative information as well as to uncover possible strategies to

consider for improvement. Open-ended questions were set and validated before the focus group discussion to ask and discuss the traditional teaching method of intramuscular injection and the new teaching method using computer software.

The objectives of the focus group discussion were as follows:

To understand how the nursing educators perceive the nursing students' competency in giving an intramuscular injection that is taught using the traditional teaching method.

To understand how nursing educators perceive the proposed teaching method using computer software in the virtual learning environment (VLE) to teach intramuscular injection among nursing students.

Implementation

Consent forms and demographic forms were filled and obtained by each participant after a briefing on the need's assessment using a PowerPoint presentation. The focus group discussions were facilitated by the project leader, a facilitator and a notetaker. The discussion was recorded, and discussion notes were typed using a laptop computer by the notetaker who has the skill of typing quickly and listen objectively. The discussion was held in a small meeting room, and all involved were sat in a roundtable. At the end of the discussion, refreshment was provided to all participants.

Data Analysis

Analysis of the focus group responses was performed according to the questions set for the focus group. Before the analysis, documentation of the focus group discussion was done by the facilitator, and the notetaker who tried to finalize thoughts using computer and data show by analyzing what has been agreed for, then editing the findings done through omitting repeated ideas and opinions discussed. The notetaker then summarized the discussion by writing a draft report. The draft report was then checked by the project leader and all co-researchers for the project for the agreement of the findings.

The trustworthiness of the data was ensured (Lincoln, Guba, & Pilotta, 1985). The reliability of the data was recognized until the data collected is

saturated. Different kinds of descriptions were used during the focus group discussion to discover the possible information and supplementary findings of their experiences. Credibility was determined by establishing prolonged engagement between the researcher and the focus group participants. Meanwhile, transferability is made by determining the results were suitable to be implemented in other situations⁽⁵⁾. Therefore, the data collected were ensured applicable to other situation and populations. To establish dependability, the preliminary categories were compared and discussed within teams. The confirmability is made by using triangulation role and the researchers' ability to understand their view to minimize bias and misunderstanding in communication.

Results

Results of the focus group discussion are presented according to the objectives as follows:

1) To understand how the educators perceive the nursing students' competency in giving an intramuscular injection that is taught using the traditional teaching method.

Generally, the participants in the focus group stated that the traditional method of teaching intramuscular injection is more of a teacher rather than student-centred. In other words, lecture-demo practices one-way communication and offers less interactive learning. According to the participants, it was also challenging to control a big group of about 40 nursing students to focus on the lecture-demo. Another issue raised by the focus group participants was the difficulty faced by the nurse educators as well as the nursing students to perform each step the same as was demonstrated during the lecture-demo.

In addition, the participants noticed that the nursing students were still lacking in mastering the techniques of handling the injection syringe correctly and firmly to give the intramuscular injection as frequently observed during OSCE and in the clinical areas. On another note, the participants observed that when using non-interactive mannequins to practice, the nursing students always faced with difficulty to feel the correct injection site and location of the sciatic nerve in the dorsogluteal site.

Regarding student's self-practice on their free time, although they were being provided with the checklist of intramuscular injection procedure and guidance from the nurse in charge of the Nursing Skills Laboratory, the nursing students often observe to come for self-practice only around the exam time. This is due to their tight teaching and learning schedule in the undergraduate nursing program. Related to this issue, it seems that there is no official record about how long they took to practice in the lab.

2) To understand how nurse educators perceive the proposed teaching method using computer software in the virtual learning environment to teach intramuscular injection among nursing students.

Participants of the focus group were triggered with questions related to using VLE for the nursing students to learn about the intramuscular injection. In this regard, general responses from the focus group participants seemed to approve that the virtual learning environment would improve the teaching method on intramuscular injection. They mentioned about the nature of using a virtual learning environment whereby the simulation is close to the reality and thus could assist the nursing students in getting a clearer picture of what is taught to them. It could also provide consistent information on the steps of giving an intramuscular injection to the nursing students compared to the lecture-demo in view of it is always ready in the online computer software. In this way, the focus group highlighted the principle of flexibility in learning which would be applied when using the software. The focus group also suggested that nursing students' participation in the practical session should be monitored via the software.

According to the focus group, rather than using a one-way communication, the software could provide a platform to allow nursing students to share information or give feedback on their performance. The focus group preferred that the software that will be produced should apply the concept of interactive learning so that it could enhance learning the intramuscular injection skills. Ideally, the graphic should have a 3-dimension so that the anatomical part of the injection site could be seen from skin layers.

The focus group suggested the computer software should allow the nursing students to virtually handle

the syringe, locate the correct site of injection. The participants in the focus group, on the other hand, argued whether the software would be able to allow the nursing students to provide privacy for the patient during giving the injection. Another recommendation by the focus group participants is to ensure the software could have two-way communication between the nursing student and the nurse educator.

Discussion

Lecture-demo has been used as a teaching methodology for psychomotor skills for many years since the program started in the institution. As frequently practiced in this institution, the lecture-demo is conducted through a PowerPoint presentation to explain about five different sites of intramuscular injection. Following this, the teaching continues with a demonstration using a dummy to identify the injection site using landmarks as well as using an orange to inject so the student feels the actual puncturing sensation of the needle. After that, the students will be divided into several groups in the nursing laboratory to practice on their own while the nurse educator passes by every group to check on the students.

According to the demographical, educational, economic and educational changes happened in the late 20 years all over the world, it becomes a necessity to add computer science and use new technology to the teaching systems. Using computers in teaching nurses had been used a long time ago, and methods of computer-assisted learnings (CAL) was mentioned in literature since the mid-1990s⁽⁶⁾. Paying more attention to create more cognitive nursing educational curriculums done by faculties/schools of nursing and hospital matrons was recommended by⁽⁷⁾. E-Learning has considered vital because its size to individualize who using it in de-centralizing the learning methodology and increase autonomy to the earners and self-guidance⁽⁸⁾. (Gleydura, 1995 #7107)

Using computer technology in education has other valuable benefits encompasses resilience and the elevation of dynamic education⁽⁹⁾, increase students' enthusiasm and gratification⁽¹⁰⁾, fee competence and decrease in teaching time⁽¹¹⁾, continuing education⁽¹¹⁾ and information accessible using the World Wide Web⁽¹²⁾.

The elasticity of education that permits students to engage in educational programs while using their own time and location to use a virtual environment⁽¹³⁾ gained through mobile-communication technology. Nursing students might ease their education; it was circuitously permitting a sense of ownership. Also, it means that students be responsible for their education process rather than of the lecturers⁽¹³⁾.

The nursing practice must be evidence-based⁽¹⁴⁻¹⁶⁾. Although changes happen in educational materials and new equipment or technology, nursing education programs did not cover the changes that occurred in intramuscular injection practices⁽¹⁷⁾. Administering intramuscular injections is a demise function in nursing practice⁽¹⁸⁾. Teaching medication administration techniques in nursing schools usually done through one lecture and might not revise efficiently afterwards⁽¹⁹⁾. There is no united standard intramuscular injection procedure available in nursing fundamentals textbooks, therefore different teaching methods available in different textbooks based on traditional methods rather than evidenced-based practices ones⁽²⁰⁾. This creation of the proposed online computer software can act as a virtual classroom and nursing skills laboratory at the same time.

Fear of mis locating the injection site decreases student's ability to master intramuscular injection technique, this virtual online course intended to increase personal competence, the personal competence as we defined it in another research article is "*The ability of self-control from disruptive emotions and impulsive feelings, the ability to facilitate and guide emotional tendencies to achieve and reach intended goals, and the ability of aligning and working with others in a group or organization towards common goals*"⁽²¹⁾.

Conclusion

The focus group agreed to the need for using the online computer software in the VLE. They hoped that the software would play 1) adding some missing features that the lecture-demo method is lacking, 2) changing the learning method to be interactive two way rather than one-way communication, 3) decreasing fear level among nursing students in learning to locate the injection landmarks and give the injection virtually using a computer rather than mannequins, 4) increasing nursing

students cognition level by using new technology, and 5) decreasing laboratory time and nurse educators required to ensure accurate delivery of the information.

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