



Nursing students' perception of high-fidelity simulation activity instead of clinical placement: A qualitative study



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SUMMARY

Background: The high-fidelity simulation (HFS) has been utilized in nursing education for more than 20 years. Advantages of the use of high-fidelity simulation in nursing education have been documented in the literature. Based on the advantages, it has been arranged as a part of the clinical study course of the first year baccalaureate nursing program in one of the nursing colleges in Macau recently.

Objective: The aim of this study is to explore undergraduate nursing students' perception of using high-fidelity simulation as part of their clinical study course in Macau.

Design: This is a qualitative study using open-ended questionnaire.

Setting: This study was implemented at the nursing laboratory between 1 April and 17 April 2015, which was the period of preliminary clinical study course of year one nursing students.

Participants: A purposive sample was sought from the voluntary year one undergraduate nursing students who participated in the clinical study course.

Methods: Students received two high-fidelity simulation sections during the course, while a self-administered open-ended questionnaire was allocated afterward. Qualitative content analysis was performed after data collection.

Results: Two themes emerged in this study, which included "appreciation" and "misunderstanding". They were further divided into five categories; as "positive feelings", "gaining a suitable atmosphere for learning", "assist of adequate emergency preparation: resourceful ability", "contempt", and "rote learning".

Conclusion: This was the first time to utilize HFS activities as a part of the clinical study course in one nursing college in Macau. These HFS activities instead of a part of real clinical placement were appreciated by nursing students. And it mainly contributed to the resourceful ability in students' view. During the HFS activities, nursing educators should consider the misunderstanding of HFS activities of students that a few nursing students despised simulator's life and got rote learning method.

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Introduction

Simulation is recognized as an essential part of nursing clinical education by nursing institute (California Board of Registered Nursing, 2015; Colorado Department of Regulatory Agencies Board of Nursing, 2015) since it can provide a safe environment for students to learn clinical practice (Arthur et al., 2013). There has been an increasing utilization of high-fidelity simulation (HFS) in nursing education since the

1990s (Crytzer, 2011). HFS refers to the use of a computer-controlled full size manikin to demonstrate realistic clinical manifestations and clinical scenarios. It can also communicate and interact with the learners (Arthur et al., 2013; Gates et al., 2012). HFS has been arranged as part of the first year clinical study course of the baccalaureate nursing program in one of the nursing colleges in Macau recently. The aim of this study is to explore undergraduate nursing students' perception of using HFS as part of their clinical study course in Macau. It aims at providing insights into the future improvement of HFS-based clinical teaching in the nursing students.

Literature Review

HFS can be used to train learners' management of imitated life-like clinical events in nursing laboratory (Levett-Jones et al., 2011). There is emerging evidence in the effectiveness of HFS in nursing education. Shin et al. (2015) conducted a meta-analysis on the effectiveness of

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simulation in nursing education by pooling 20 experimental and quasi-experimental quantitative studies. They found that HFS had a large size effect (0.81), which seemed to be larger than that in the overall simulation interventions (0.71) (Shin et al., 2015). Several systematic reviews further examined the impact of HFS in different aspects of nursing education. It was revealed in a systematic review that the mean scores of knowledge and skill exams were increased by 0.53 point and 1.15 points respectively after using HFS, but a mixed result was found in the score of objective structured clinical examination (OSCE) (Yuan et al., 2012b). Moreover, a mixed contribution of HFS was also seen in the confidence and competence in another systematic review (Yuan et al., 2012a).

The findings from some qualitative studies tend to be positive when exploring the perceptions of HFS in both faculty members and students. Silvia (2013) conducted a qualitative case study by interviewing and allocating qualitative questionnaires to 14 nursing faculty to explore how HFS can influence students' safe clinical practice. It was demonstrated that 78.5% of the faculty thought HFS activities could enhance learning outcome by providing safer patient care, while same percentage of them agreed HFS could increase nursing students' critical thinking skill (Silvia, 2013). Around 64% of them also thought that it enhanced the acquisition of skills (Silvia, 2013). Similar results were indicated in another study using semi-structured interview. Students reported an increase in knowledge, skill and confidence level in clinical placement after HFS (Ogilvie et al., 2011). Furthermore, students believed that HFS was very useful and should be set as a requirement before clinical study (Darcy Mahoney et al., 2013). This is also supported by the result of another study. It was reported that 80% of the nursing students agreed HFS as an authentic learning experience, while about 95% of them thought it could enhance patient safety, and the same proportion of them planned to apply the skills learnt in simulation to clinical practice (McCaughy and Traynor, 2010). Additionally, HFS activities could lead to students' sense of confidence, preparedness, and satisfaction with the clinical performance (Crytzer, 2011). Despite the advantages mentioned in these qualitative studies, some studies argued that HFS can also lead to anxiety in participants. A lack of communication skill during the simulated interaction was reported (Pike and O'Donnell, 2010). Students might also feel anxious as it made them think of the future placement and transition to a staff nurse (McCaughy and Traynor, 2010). There are some suggestions related to the possible improvement in HFS activities in the literature. Students suggested that it was necessary for them to have more time to be familiar with the functions of HFS (Wotton et al., 2010). The study of Ogilvie et al. (2011) showed that, students agreed that a positive HFS learning experience could be enhanced by a realistic clinical scenario experience under an appropriate facilitation, with a debriefing section. The importance of realism and facilitator was also emphasized in another study; it was argued that, students' learning experience could be influenced by the ability of engaging participants with the character and taking the activity seriously, while the knowledge and skills of facilitators were also reported to be significant during the process (Reid-Searl et al., 2011). Similar finding was also described in Pike and O'Donnell's (2010) study.

These suggest the essential elements in designing and implementing HFS activities. A simulation model on HFS activities was proposed in 2005 by Jeffries. It was widely used in guiding simulation activities; it has been applied to the simulation of end-of-life-care, self-confidence promoting etc. (Fabro et al., 2014; Samawi et al., 2014). Jeffries' simulation model comprises five elements, which are the best practices in education, student factors, teacher factors, simulation design characteristics and outcomes. Educational practices include active learning, immediate feedback, student/faculty interaction, collaborative learning, and high expectations, allowing diverse learning styles and time on task. Student factors mean that students should respond to their roles (actors and observers) during the simulation activity, while teacher factors involve the teaching and evaluating roles. The design of the simulation should be tailored to these three mentioned factors, and at the same time, be able to support course goals, skill

competencies, learning outcomes and include debriefing section. The outcomes should be associated with the goals, and can be divided into knowledge, skill performance, learner satisfaction, etc. (Jeffries, 2005).

In view of the mentioned advantages, HFS activities guided by Jeffries' simulation model has been arranged as part of the first year clinical study of the baccalaureate nursing (BSN) program in one nursing college in Macau recently. Nevertheless, to date, there is no qualitative data that explores the perception of BSN students of utilizing HFS as a clinical placement either directly or indirectly. Hence, the aim of this study is to explore undergraduate nursing students' perception of HFS activities instead of clinical placement. It aims at providing insights into the future improvement of HFS-based clinical teaching in the nursing students in Macau.

Methods

This is a qualitative study using an open-ended questionnaire. Students received two four-hour HFS sections at nursing laboratory during the period of clinical study course, while a self-administered questionnaire was then allocated and a qualitative content analysis was performed. Jeffries' simulation model was employed in the design of the activity (Fig. 1), while Laerdal SimMan™ patient simulator was used during HFS activities. Several optional sections were held to introduce the simulator's function and the concept of HFS. A meeting was held by the subject teachers before class to discuss the design of the activity, while a mock section was also run among the teachers to ensure the maximization of learning experience and to seek improvement. Before the sections, a brief scenario introduction and relevant materials were uploaded onto the student learning platform.

The participants were divided into groups of 16 to 23 during each HFS activity. Three of them were assigned with different roles, mostly nurses, while the others were observers. On the other hand, as the HFS activities in this study were for learning purpose, the teachers' role was to provide support throughout the section.

The four-hour simulation class was divided into four sections for two groups respectively, which were briefing (half hour), preparation (half hour), running (half hour) and debriefing (half hour). During the briefing section, the simulated environment and technology involved were oriented, while the objectives, activity, amount of time given, role specifications and outcome expectancies were explained. Preparation time was allowed for initial discussion and being familiar with the simulated environment. The scenario was then run under a provided time frame. The role-players were required to practice using the think-aloud technique. Cues and help could be provided by both the observers and the teachers to offer ideas when required during the activity to enhance the idea of collaborative learning. Observers were also asked to take note of the clinical presentation, missing data, and given and required intervention. The whole process was recorded for debriefing reference. Students were encouraged to review and discuss the scenario after the running section under the guidance of the facilitators. Strengths and weaknesses were also discussed for future practice and improvement.

Participants

A purposive sample was recruited from the year one undergraduate nursing students in one of the nursing colleges in Macau (there are two nursing colleges in Macau). The students who were willing to answer the open-ended questionnaire voluntarily after the HFS activities were included in this study. The targeted nursing students had already finished English I, Chinese, Psychology, Fundamentals of Nursing I, Anatomy, Physiology and Biochemistry. They were studying Sociology, Health Assessment, Pharmacology, Pathophysiology, Microbiology-Immunology, Fundamentals of Nursing II and English II in the semester.

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