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Undergraduate Nursing Students' Perceptions of Satisfaction and Self-confidence with High-Fidelity Simulation A Quantitative Systematic Review

Marwa Talal JAMAL BASHA
Master at University of Salford School of Health & Society
Corresponding Author: Marwa Basha

Abstract
Aim: This study is a systematic review of the quantitative evidence available for the usage of High-Fidelity Simulation (HFS), as part of the nursing education programme to improve their self-confidence and satisfaction.
Background: With the evolution in clinical problems and the world of medicine, the education of nursing students also needs to go through corresponding changes. The basic nursing skills have long been considered important for reducing negative outcomes for any hospital. The development of self-confident nurses can lead to effective patient handling and mitigating risks to a large extent. Simultaneously, progressive development of new technologies has presented a greater impact upon learning methods. More modern teaching methods make use of practical Circumstances to teach students, and therefore, give them a more realistic, hands-on experience.
This systematic review will critically analyze the available literature and scientific findings that have studied the effects of using one of the relatively more modern developments in teaching Methods, HFS, for educating self-confident and satisfied nurses. HFS is an example of an Approach that creates or reinforces real experiences with guided experiences to reproduce Essential parts of the real world interactively. Therefore, nursing students can learn how to critically analyse the patients and go through the process of decision making for their treatments without putting the patients at risk. Eventually, it will also help nursing educators in Saudi Arabia to develop competent clinical practices by advancing and improving their educational programmers.
Design: Quantitative Systematic Review
Methods: As part of the systematic review, a detailed database search was conducted to include Relevant studies from the medical databases within the last ten years period, including: Medline, Science Direct, Cochrane Library, PubMed, EBSCO, and ELSEVIER through a PICO Framework. Studies including quantitative measurements of self-confidence and satisfaction in the nursing students before and after using HFS were prioritized, along with studies that analyzed the factors that contribute towards the self-confidence and satisfaction of students.
Findings: 10 studies were included in this review that fulfilled the inclusion criteria and their quality was appraised using JBI QARI Appraisal Checklist for Interpretive & Critical Research.
Conclusion: This systematic review was able to establish the connection between the self-confidence of nursing students after they were able to practice upon clinical diseases and cases through HFS. Furthermore, the research studies included in this review were able to further establish important factors that put up to the development of confidence and self-efficacy in nursing students before their clinical modules of an education programme.

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I. Introduction and Literature Review

1.1 High-Fidelity Simulation (HFS) in Nurse Education

Simulation-based (SB) technology, in its many forms, has been used in nursing education as a teaching approach and evaluation tool for a number of years (Nehring, 2010). It was first introduced as a support tool in 1911 and has gained popularity in nursing ever since (Hyland & Hawkins, 2009). SB provides student nurses with experiential learning opportunities that replicate real-life scenarios and help prepare them for 'clinical environments and encounters' (Bauman, 2012), thus applying theoretical knowledge to practice. In addition, this supports students while they transition into an ever-changing health care environment (Chiniara et al., 2013). Furthermore, there have been important advances in the fields of research and technology, which have enabled the development of novel methods in order to be used as effective ways of learning, as well as instilling positive

progress (Yuan, Williams & Fang, 2011). Recently, members of the faculty of nursing have made progress in making use of pedagogical approaches, in order to enhance the learning of students who specialise in nursing. Such tools are designed in the hope to provide nursing students with an appropriate platform for effective, pragmatic development of their nursing skills. One specific technique is High-Fidelity Simulation (HFS), which is considered to be an effective teaching and learning strategy, as is confirmed by Agha, Alhamrani and Khan (2015). However, the method is a developing one, which has been in operation for almost two decades at present. HFSs are life-size manikins with simulated, pathophysiological and pharmacological responses, and sophisticated interactive capability (Tsai, Harasym, Nijssen-Jordan, Jennett& Powell, 2003). Additionally, Issenberg, McGaghie et al (1999) defined a simulation as "a person, a device or set of conditions which attempt to present education and evaluation problem authentically" Moore (2014), on the other hand, defines simulation as an effective training teaching strategy for improving students' efficient communication and team working skills. Potential Impact of the Review The value of the current study is that it will enable nursing educators in The KSA to rethink existing programmes. Also, the incorporation of HFS as a major pedagogical tool will indirectly affect the quality of patients care and the general competence of nursing in the country. With limited opportunities for suitable placements that offer a wide-range of clinical experiences, HFS will enable students and help them with their clinical judgement in addition to the enhancement of their self-confidence in nursing (Bambini, Washburn & Perkins, 2009).

II. Methodology

2.1 Introduction

This chapter details the forms of methodology that are used in the process of this current Study's systematic review. Different studies in relation to HFS were descriptive at time, while Others were experimental in nature, as intervention for the purpose of research is sometimes Required. Additionally, a systematic search was commenced, in order to review evidence relevant to the research questions, as was outlined in the introduction chapter. In general, as stated by Staples and Niazi (2006), the current review aims to present previous literature and provide Assessment and examination into their relevance, in order to develop upon the research questions introduction. Through the use of a systematic methodology, the review is able to detail the best methods that help in the identification, selection and appraisal of critical research, as well as to evaluate data from included studies (Moher et al., 2009). As Siddaway (2014) notes, the measures that are objective, systematic and transparent in the review will present a greater level of reliability; while Dixon-Woods et al. (2006) adds that this will create a better level of transparency for future studies to use.

2.2 What is a Systematic Review?

A systematic review is literally a review of prior, genuine research studies, where a common research question is assessed (Mallett et al., 2012). It follows a systematic process to address the methods, and significance involved in the original studies, in an explicit manner. Furthermore, a systematic review is essentially a form of summary, which also identifies the relevance of the studies, and critically describes and evaluated the procedures being discussed in them, in order to address a primary research question (Rudnicka& Owen, 2012). However, the process is rather exhaustive and requires precision and accuracy. Eventual goals of the systematic study are to provide a reliable outcome (Siddaway, 2014); the systematic review especially takes into account those studies which are perceived to provide reliable results. Consequently, due to the accuracy that the review might be able to provide, it has become widely popular in health care and similar fields (Mallett, Hagen-Zanker, Slater &Duvendack, 2012). Inclusion and Exclusion Criteria

2.6.1 Types of Studies

The current review focuses on quantitative primary studies to analyse undergraduate nursing students' perceptions regarding satisfaction and confidence in relation to the use of HFS in learning. Indeed, Boland, Cherry, & Dickson (2013) state that individuals' perceptions and potential impacts are most progressively investigated through quantitative research. This also includes research that functions through mixed methods, which produce their own findings and a quantitative discussion section. In the current review, the following studies were excluded from the search:

- Qualitative studies;
- Systematic reviews;
- Studies not published in English languages.

The inclusion and exclusion criteria can more appropriately be defined as the basis on which the search process is directly dependent (Rudnicka& Owen, 2012). This helps to determine which studies, from all the research conducted for a particular topic, are relevant to be included as part of the systematic review. The criteria have to be determined in advance of the search process, in order to remove the potential for personal

biases. In addition, the boundaries of the criteria also need to be defined, especially for the practicality to be considered for a certain concept to be appropriately applied (Gerrish& Lacey, 2010). The following figure shows the appropriate inclusion and exclusion criteria for this particular study.

Summary of Inclusion and Exclusion of Focus and Type of Studies

Table 1: Inclusion and Exclusion Criteria

Inclusion Criteria Exclusion Criteria

Articles containing data obtained for nursing students.	Articles written prior to 2007.
Articles written only in English language	Articles excluding data achieved by appropriate methods to answer the review
Articles discussing the aspects of self-satisfaction and self-confidence. .	Articles including focus on other aspects, such as clinical skills and competence
Articles published between 2008 and 2018	Articles containing data for non-nursing Students.
	Articles containing data for nursing students that are not undergraduates

It is important to note that only articles written in English language were analysed. This was in terms of all the literature review, the original research, and the data collected, irrespective of what form. In addition, all irrelevant studies that focused on other sectors, other than nursing or other aspects rather than confidence and self-satisfaction, were excluded. On the basis discussed above, approximately 20 articles specific to the particular criteria were viewed at first, although 10 following the exclusion criteria had to be excluded. That left behind a total of 10 articles used for the particular systematic review.

III. Results of the Search

The systematic selection of studies from the academic databases produced 202 studies in total, whilst also the duplicate researches were removed (n=56). Furthermore, the titles and abstracts of 146 different studies were selected for review, although approximately half of these were removed as they failed to answer the research questions (n=75). Therefore, the abstracts from 71 studies were subsequently evaluated, in order to determine whether they were relevant to the review questions. Following this, certain studies (n=29) were excluded as not being relevant, while full text copies of the other selected articles were assessed to check the validity of the studies to potentially answer the review questions. As a result, twenty studies were the final Articles discussing the aspects of self-satisfaction and self-confidence.
Articles including focus on other aspects, such as clinical skills and competence.
Articles published between 2008 and 2018 Articles containing data for non-nursing students.
Articles containing data for nursing students that are not undergraduates.
total of studies to be included in the current review, and ten articles were selected for this specific systematic review's questions.
29 papers were excluded based on the following reasons:

- 10 Systematic reviews;
- 6 Different outcomes;
- 8 Different objectives;
- 4 Containing data for non-nursing student;
- 1 Non-English language.

2.9 Search Outcomes

PRISMA is the most appropriate method used for the purpose of reporting. It is mainly used in systematic reviews, and meta-analyses (Moher et al., 2009). The flow diagram below is essentially an appropriate representation of the flow of information through four primary steps that occurs in a systematic review. These criteria are for the purpose of identification, eligibility, along with screening for proper choices of research material. The flow diagram in Figure 1 shows the Figure PRISMA flow diagram as presented by Moher et al. (2009).

IV. Summary of the Findings

In general, these research studies were able to determine that nursing students appreciate the usage of HFS in their teaching curriculum, as it can prepare them for their clinical rotations, as well as to ensure

minimum negative outcomes. These studies have also outlined the importance of using faculty members present in these simulations that can influence the clinical performance of these students, and therefore, should always be taken into account through their evaluation.

Moreover, the measure of self-confidence and self-efficacy is important because these two traits determine whether the undergraduates or novice students will continue with their profession or not. In countries such as Japan and Saudi Arabia, it has been found to be important for these students to be trained with simulations, in order to improve their satisfaction and selfconfidence levels, together with ensuring better results in real clinical situations. Furthermore, it can help to reduce the annual rates of students who leave the profession altogether. Furthermore, future research studies need to highlight the different levels of simulations and how they impact each individual student, as well as which level relates the most with novice students, in order to produce better results.

V. Conclusion

5.1 Implications for Practice

With the continually evolving world of nursing education throughout the world, the constant need to develop and improve the quality of education of each nurse has dramatically increased. The use of better techniques is the need of the hour, in order to ensure better patient care and reduce the overall adverse outcomes. The application of HFS can significantly enhance upon the skillset of undergraduate nurses early on in their careers and help them to develop their strengths and become better acquainted with multiple clinical scenarios before starting their clinical rotations. As a consequence, they can learn to be more confident in their treatment

methodologies, as well as become better in communication with their patients and senior physicians, and therefore help in improving the standards of patient care overall in their country.

This systematic review aimed to review all literature available and highlight the main obstacles in improving the self-confidence and self-efficacy of nurses; and secondly, to state how the present learning techniques can be improved to highlight the long-due upgrade of nursing education in the KSA. Therefore, this study has been able to establish that along with HFS; nursing educators can also play a more significant role in the careers of undergraduate nurses.

5.2 Implications for Future Research

This systematic review has been able to establish a unique perspective on the use of new technologies for teaching undergraduate nursing students. In countries such as the KSA, the overall motivation levels and the accessibility to adequate learning resources is limited and low, and therefore, there is a high drop-out of students from the profession overall. This review can help nursing educators in countries such as Saudi Arabia to improve upon their teaching techniques and methodologies and help them to improve the acquisition and retention of knowledge in the undergraduates. Furthermore, the educators can also look into the other part of this study, which focuses on the factors that are also tied to ensuring and developing selfconfidence, self-efficacy and satisfaction in students. Incorporating these factors into teaching modules can greatly help to strengthen the theoretical, as well as the practical side of the nursing education for these undergraduates.

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