

Nursing Students' Self-Efficacy in Cardiac Critical Care: A Novel Pre-Internship Educational Package

Shima Ataee

<https://orcid.org/0000-0002-4697-4893>
Ilam University of Medical Sciences,
Iran

Sanaz Aazami

<https://orcid.org/0000-0002-7665-345X>
Ilam University of Medical Sciences,
Iran

Ashraf Direkvand-Moghadam

<https://orcid.org/0000-0003-1789-4373>
Ilam University of Medical Sciences,
Iran

Siros Norozi

<https://orcid.org/0000-0002-5780-4160>
Ilam University of Medical Sciences,
Iran

Mosayeb Mozafari

<https://orcid.org/0000-0002-8956-4704>
Ilam University of Medical Sciences,
Iran
mosayeb.mozafari@yahoo.com

Abstract

Clinical teaching is the core of nursing education and together with the decrease in clinical learning opportunities should be top priority for research attention. This study aimed to determine the effects of an educational pre-internship package on nursing students' self-efficacy to deliver critical care. This controlled experimental study was conducted among 37 nursing students selected by using the census sampling method. The educational intervention was performed for three days in a case group, before beginning the internship. The data were collected using a demographic information questionnaire, the self-efficacy-in-clinical-performance questionnaire, and 10 clinical scenarios. The self-efficacy of the test group was examined at baseline and after the intervention, and then compared with the control group. The data were analysed using the Statistical Package for the Social Sciences (SPSS) version 24, through an independent *t*-test and paired *t*-test. The results showed that the intervention resulted in a significant difference ($p < 0.001$) in the total score of self-efficacy between the case (161.26 ± 6.07) and control (119.72 ± 10.13) groups. In addition, the correlation between self-efficacy and score of the students' performance was significantly positive (89%, $p < 0.001$). Also, there was a series of significant differences ($p < 0.001$) in the mean scores of examining the

patient, the nursing diagnosis, care planning, implementing the care plan, and assessing the care plan between cases and controls. The results of this study indicated that the educational pre-internship package for cardiac critical care has a positive effect on promoting nursing students' self-efficacy. These findings can be used as a strategy to enhance students' competency before entering the internship and graduation.

Keywords: educational pre-internship package; cardiac critical care; self-efficacy; nursing students

Introduction and Background

Nursing education focuses on the training of competent students in terms of knowledge, skills, and professional attitude, and aims to empower students to play their role as professional nurses and eventually to enhance public health (Abdal, Alavi, and Adib-Hajbaghery 2015, 1). Nursing education is a combination of practical and theoretical experiences of learning. Clinical education is the core of nursing education. As a process that facilitates learning, clinical education helps the student to integrate theoretical knowledge with skills of practice in the clinical setting (Ironside, McNelis, and Ebright 2014, 185).

Self-efficacy is another important concept that helps nurses to perform better when taking care of patients. Self-efficacy has been defined as a person's belief to perform the intended functions (De Simone, Planta, and Cicotto 2018, 131). In other words, self-efficacy refers to the person's perception about their ability for doing special tasks effectively and competently. Self-efficacy is of great importance in educational settings, because such settings are suitable for the growth and formation of self-efficacy (Rowbotham and Owen 2015, 561–562). Researchers have found that self-efficacy plays a key role in applying the scientific and professional knowledge and skills (Stajkovic et al. 2018, 239). In academic settings, self-efficacy depends on the person's perception about their ability in achieving a certain objective. It is the link between knowledge and behaviour, which has a positive effect on thoughts, emotions, creativity, motivation as well as performance (Honicke and Broadbent 2016, 64).

There is an interactive relationship between self-confidence, self-efficacy, and clinical performance. Self-efficacy in clinical performance plays a key role in applying competences. Furthermore, competency and self-efficacy in clinical practice affect the quality of care provided by nursing students (Fry and MacGregor 2014, 92; Mohamadirizi et al. 2015, 1118).

It has been shown that achieving the objectives of clinical education especially in cardiac care units (CCUs) is often difficult (Forouzi et al. 2018, 59). Furthermore, students' performance in some emergency situations is unacceptable (Fero et al. 2009, 140). Some studies reported that the quality of clinical education is inadequate owing to reasons such as the disproportion between the number of trainers and students,

the insufficient number of patients, the lack of proper learning opportunities, unsuitability of the required contact time with patients to complete learning in clinical practice, the lack of integrity between theoretical and clinical education, and the lack of educational hospitals (Elhami et al. 2018, 252). The key points of clinical education from the students' viewpoint are teaching them how to evaluate at the beginning of their practical courses and how to treat the clinical trainer. However, the two most important weaknesses are the lack of cooperation between the ward nurses and the students, and the gap between theoretical knowledge and clinical activities (Esmaeili et al. 2014, 461).

Insufficient preparation of nursing students especially in clinical education resulted in some concerns about the students' capabilities and consequently the patient care and patient safety (Baraz, Memarian, and Vanaki 2015, 157; Jasemi et al. 2018, 22). This problem causes stagnancy in the acquisition of the required knowledge and skills along with the current rapid technological changes (Jamshidi et al. 2016, 2). Furthermore, inadequate preparation of nursing graduates for transition into professional roles and entering the clinical settings has unfavourable effects on their adaptation to the new environment which eventually cause adverse reactions in nurses' physical and psychological health status. Thus, educational programmes should develop more opportunities to learn in accordance with the needs of society and the profession (Labrague 2014, 425). Various systematic reviews, meta-analyses, and studies have indicated that simulation leads to improved performance and better results in comparison with traditional methods of nursing education (Lubbers and Rossman 2017, 144; Pike and O'Donnell 2010, 409; Shin, Park, and Kim 2015, 179; Yuan, Williams, and Fang 2012, 29).

Statement of the Research Problem

The national curricula of the bachelor nursing programme in Iran consist of 114 credits, which include theoretical and practical lessons, and a short internship course in the first six semesters. This is followed by 24 full-internship credits in the last two semesters that should be obtained in hospital settings and healthcare centres in order to acquire the necessary skills for working in a real clinical setting. The quality of education in these courses plays a significant role in acquiring the skills required for nurses to prepare them for their future occupational responsibilities (Farsi et al. 2010, 10–11) and to effectively enhance their self-efficacy, which enables them to learn different skills and to implement learned skills with adequacy and confidence (Yousefy, Yazdannik, and Mohammadi 2015, 1296–1298; Zhao et al., 2015, 402–403). This internship programme is presented as a type of mentoring programme supervised by lecturers of the nursing departments. Currently, the students who are working in the CCU as part of their internship programme only work for 28 hours over seven days in a CCU ward in the first six semesters. Some studies showed evidence of poor quality care by these students because of improper training in the first six semesters and some degree of uncertainty in the last two semesters (Akhu-Zaheya, Gharaibeh, and Alostaz 2013, e336–e338; Kim and Jang 2011, 253; Tawalbeh 2017, 290–292). A lack of

concise education can result in improper safety and quality care (Coster, Watkins, and Norman 2018, 77–79; Nobahar 2016, 2402).

A CCU is one of the important educational settings in a hospital. Patients admitted to this ward need greater nursing care and more accurate supervision owing to the potential risk of life-threatening events. Several skills need to be obtained by a nurse to work in the CCU, including cardiopulmonary resuscitation (CPR), working with the electroshock device, operating and interpreting the electrocardiogram (ECG), monitoring of cardiac rhythm, diagnosing arrhythmia, and performing therapeutic and curative measures (Le May et al. 2016, 1204–1206). Thus, nursing students should be competent in the mentioned fields during their internship at CCU wards. Timely diagnosis and treatment of cardiac arrhythmia are important factors in reducing patients' mortality. Nurses are frontline in assessing patients' health status in critical wards, and also the first healthcare providers recognising the need to perform CPR and defibrillation. Hence, nursing clinical education plays a significant role in improving patients' outcomes. The role of competent nurses especially in critical care can lead to enhance nurses' self-efficacy and help to optimise quality care for patients with cardiac diseases (Forouzi et al. 2018, 59; Park, Woo, and Yoo 2016, 273).

Aim

Owing to the importance of self-efficacy in clinical education and the paucity of studies on self-efficacy and its affecting factors, this study aimed to determine the effect of an educational pre-internship package on nursing students' self-efficacy to deliver critical care. In this study we applied an educational package consisting of both theoretical and practical parts before the students start the internship programme to repair the gap between their knowledge and practice, to reinforce their skills, and to evaluate the effects of the educational pre-internship package to provide evidence of the usefulness of this intervention for nursing schools.

Methods

This experimental study examined the effect of an educational pre-internship package, including content of cardiac critical care, on students' self-efficacy. The students were studying for the bachelor of nursing (internship semester (7th and 8th semester)) at the University of Medical Sciences (IUMS), in Ilam, Iran, in 2018.

Target Population and Sampling

Regarding the limitation of the study population, all 37 nursing students who passed the theoretical course for intensive care nursing and who were ready to enter the internship semester (7th and 8th semester) were enrolled in the study. Studies by Kim and Jang (2011), and Meyer et al. (2011) have also used the above-mentioned method. In this study, students were randomly assigned to the case (19 students) and control (18

students) groups (see Figure 1). The case and control groups were matched by gender and age. Samples were randomly selected and based on grouping of the internship allocated to 11 smaller groups of three to four students.

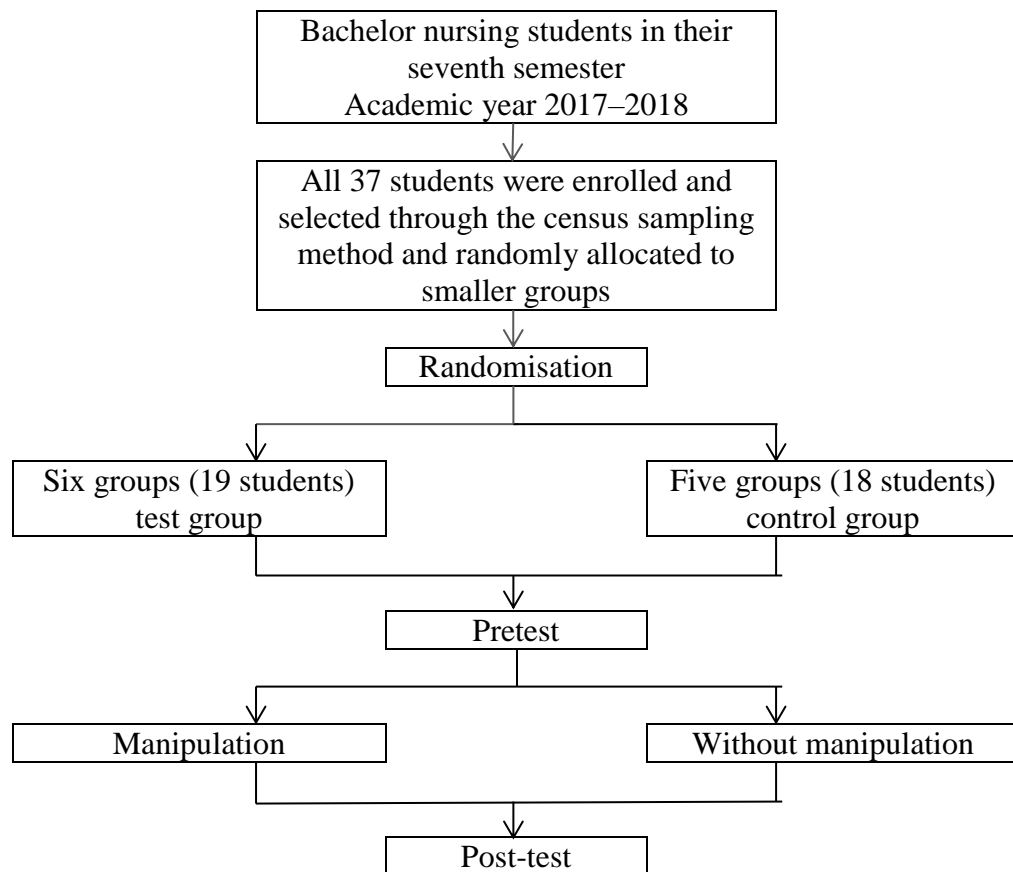


Figure 1: Flow chart of the population and sample size of the study

Ethical Consideration

The students were initially informed about the aim of study, benefits and their right to withdraw from the study without any excuse. They were also assured that all of their information would be treated as confidential. Eventually, the participants signed a written consent form. This article is the result of a research project, approved by the ethics committee of the UIMS under the number ir.mediam.rec.1396.145.

Intervention

Thirty days before initiating the internship programme, the educational booklet and a set of skills package were provided to both groups. The content of the educational booklet was prepared based on the outlines of the intensive care nursing internship curricula, drug protocols of the CCU ward, and updated CPR guidelines. The booklet

contained five chapters on electrocardiography, angina, myocardial infarction, CPR, and common CCU drugs, which have been verified by five assistants, an associate professor of nursing and two cardiologists.

The students were trained in a clinical skills lab for some of the procedures, including diagnosing and caring for common arrhythmia, diagnosing myocardial infarction and its types, and administering common CCU drugs. Furthermore, several other procedures (such as CPR, working with the electroshock device, heart rhythm monitoring, and operating the ECG) were taught through simulation by mannequins. The duration of the educational sessions for each group was four hours daily for three days. The educators were selected from the nursing and cardiology departments. The control group entered the internship programme of the CCU according to their routine schedule without any prior education. Both groups completed the self-efficacy-in-clinical-performance (SECP) questionnaire and the questionnaire on demographic information on the first day of intervention before starting the internship course.

Two weeks after the end of the internship, all 37 students enrolled in an objective structured clinical examination (OSCE) with 10 stations to test their skills and knowledge. Ten clinical scenarios were designed to measure their skills. Two of the scenarios were about diagnosing common arrhythmias and appropriate nursing and therapeutic measures. Four scenarios were about administering four common CCU drugs. Scoring the responses for these six scenarios included one score for a correct answer and zero for an incorrect answer or correct or incorrect administering of the drugs, yielding a total of 14 scores. Four other scenarios included four main procedures assessed by a checklist. The checklists contained 27 items in total, and the items were adjusted based on the scenario propounded in each procedure with considering the standard of nursing procedures. Each scenario was evaluated as “is not able” or “can perform” options with one and zero scores, respectively. Ten items were related to operating the ECG, seven items were associated with CPR, seven items related to working with the electroshock device, and three items were related to heart rhythm monitoring. The total scores for the 10 scenarios ranged between 0 and 41.

In order to ensure the content validity of the scenarios, a panel of experts consisting of 10 faculty members were asked to evaluate the items. Eight trained observers completed the checklists in eight stations (administering four common CCU drugs, ECG, CPR, working with the electroshock device, and heart rhythm monitoring). At two stations the students were asked to develop a care plan and responded to questions about presented patients in that station. In addition, both groups completed the SECP questionnaire after passing the OSCE. In order to ensure the equity of the educational content that the students received, support was provided for the students in the control groups after completing this trial. The intervention was conducted from September 2018 to February 2019.

Data Collection

Data were collected using the SECP questionnaire, the demographic information form, and 10 clinical scenarios with an OSCE. The demographic information form included age, gender, the cumulative grade point average (CGPA), the average grade until the end of the sixth semester, and the number of failed courses.

The SECP questionnaire, which was developed by Cheraghi et al. (2009), contained 37 items in four dimensions based on the nursing process. These dimensions include assessment (12 items), nursing diagnosis and planning of a care plan (nine items), implementation of the care plan (10 items), and the evaluation of the care plan (six items). The scoring used a five-point Likert type scale ranging from 1 (I am completely confident) to 5 (I am not confident at all). The total scoring for the SECP ranged from 37 to 185, and the higher score indicates a higher self-efficacy (Cheraghi et al. 2009, 220). Content, face and construct validity and reliability of SECP were reported by Cheraghi et al. (2009, 220). Investigation of SECP internal consistency by Cheraghi et al. (2009, 216) of 207 students indicated that the Cronbach alpha coefficient of the entire instrument was 0.96 ranging from 0.90 to 0.92 for the four dimensions. Retesting within a two-week interval using Pearson's correlation coefficient of 0.94 suggested suitable consistency of the SECP questionnaire (Cheraghi et al. 2009, 217–219). In this study, the face and content validity of the questionnaire was ensured through Waltz and Bausell's (1981) content validity index method. A pilot study was conducted among 18 students to investigate the reliability of the questionnaire. The results of the pilot study indicated an adequate dimension-based internal consistency by Cronbach's alpha coefficient of 0.89 for assessment of patients, 0.84 for nursing diagnoses, and 0.80 and 0.73 for the implementation of the care plan and its evaluation, respectively.

Data Analysis

The data were analysed by the Statistical Package for the Social Sciences, version 24, using data description (mean, standard deviation, frequency and frequency percentage) and appropriate inferential statistical tests (independent and paired *t*-test). The normal distribution of data was assessed by the Kolmogorov-Smirnov test.

Results

Our results showed that 17 students were male (45.9%) and 20 (54.1%) were female. The mean age of participants was 22.86 ± 2.18 years (21–34 years). According to the results, the mean \pm SD of the demographic variables did not differ significantly in the case and control groups ($p > 0.05$) (see Table 1).

Table 1: Comparison of participants' characteristics between the two groups

Variable*	Groups		p-value
	Case	Control	
Age	23.31 ± 2.94	22.38 ± 0.69	0.559
Total average	15 ± 1.49	15 ± 1.49	0.313
Score of theoretical course of intensive care nursing	15.55 ± 0.98	15.55 ± 0.98	0.313
Score of internship course of intensive care nursing	13.8 ± 92.51	14.94 ± 2.04	0.822
Number of failed courses	17.31 ± 1	17.5 ± 0.78	0.443
Number of failed semesters	2 ± 4.05	0.66 ± 1.23	0.599

*Values are given as mean ± SD

According to the results, the mean scores of self-efficacy and its dimensions were not significantly different between the case and control groups at baseline ($p > 0.05$). However, at the end of the course, the total score of self-efficacy was significantly ($p < 0.001$) higher in the case group (161.26 ± 6.07) compared to that of the control group (119.72 ± 10.13). Similarly, the results showed a significant increase in the mean score of patient assessment, nursing diagnoses and planning, implementing, and evaluating of the care plan among the case group, in comparison to that of the control group (see Table 2). Moreover, a significant difference was observed in the total score of the skills test in the case group in comparison with that of the control group ($p < 0.03$).

Table 2: Comparison of the self-efficacy and its dimensions between the two groups based on the time of course

Time of the course	Variable*	Groups		p-value
		Case	Control	
Before	Assessment of patients	41.52 ± 7.35	39.33 ± 6.73	0.351
	Nursing diagnoses and planning of the care plan	31.2 ± 15.33	30.94 ± 5.36	0.845
	Implementation of the care plan	36.1 ± 5.95	35.72 ± 3.12	0.499
	Evaluation of the care plan	21.05 ± 3.53	19.88 ± 3.75	0.388
	Total self-efficacy	129.89 ± 18.98	125.88 ± 10.15	0.125
After	Assessment of patients	52.05 ± 2.93	38.33 ± 5.58	< 0.001
	Nursing diagnoses and planning of the care plan	38.3 ± 13.3	26.3 ± 84.13	< 0.001
	Implementation of the care plan	44.68 ± 1.73	35.11 ± 3	< 0.001
	Evaluation of the care plan	26.21 ± 1.18	19.88 ± 3.75	< 0.001
	Total self-efficacy	161.26 ± 6.07	119.72 ± 10.13	< 0.001

*Values are given as mean ± SD

Elaborating results from the clinical scenarios indicated that the students of the case group obtained a significantly ($p < 0.05$) higher score in the following scenarios compared to the students of the control group: CPR, monitoring of heart rhythm, working with the electroshock device, operating the ECG, diagnosing common arrhythmias and proposing suitable interventions, and administering common CCU drugs (see Table 3).

In addition, there was a significant correlation between the reported self-efficacy and the total score obtained from the OSCE (Pearson's coefficient 89%, $p < 0.001$).

Table 3: Comparison of the skill test between two groups based on the time of course

Time of the course	Variable*	Groups		p-value
		Case	Control	
Before	CPR	2.78 ± 1.315	2.22 ± 1.06	0.092
	Heart rhythm monitoring	1.52 ± 1.17	1.94 ± 0.80	0.313
	Working with the electroshock device	2.05 ± 1.12	2.38 ± 0.97	0.443
	Operating the ECG	3.31 ± 1.24	2.72 ± 1.12	0.178
	Diagnosing arrhythmia and choosing appropriate treatment	0.84 ± 1.01	0.72 ± 1.01	0.707
	Therapeutic and medicinal measures			
	Administering common CCU drugs	0.73 ± 1.04	1.05 ± 1.1	0.408
	Total score of skills	11.26 ± 4.54	11.05 ± 3.05	0.830
After	CPR	6.26 ± 0.65	3.22 ± 1.06	< 0.001
	Heart rhythm monitoring	3.00 ± 0.84	2.55 ± 0.51	0.020
	Working with the electroshock device	6.57 ± 0.60	3.44 ± 0.92	< 0.001
	Operating the ECG	8.42 ± 6.00	4.11 ± 1.49	< 0.001
	Diagnosing arrhythmia and choosing appropriate treatment	3.73 ± 1.14	1.38 ± 1.50	< 0.001
	Therapeutic and medicinal measures			
	Administering common CCU drugs	6.1 ± 2.07	1.94 ± 1.62	< 0.001
	Total score of skills	34.1 ± 4.10	16.6 ± 3.80	0.030

*Values are given as mean ± SD

Discussion

This study was performed to investigate the effects of the educational pre-internship package for critical cardiac care on nursing students' self-efficacy. The results showed that students who received the package reported higher self-efficacy compared to those of the control group. Furthermore, the students' skills in patient assessment, nursing diagnosis, planning, evaluating and implementing of the care plan were significantly enhanced among the students who participated in the case group as compared to their counterparts.

The current study showed that clinical education promotes nursing students' skills in critical care. It has been shown that theoretical and practical educational courses on emergency care, intensive care and cardiac care remarkably enhanced students' competency and self-confidence (Baxter and Edvardsson 2018, 159). The use of a mannequin and simulated scenarios for emergency and critical care enabled the students to acquire sufficient practical skills leading to a better performance in the final exam (Lyovkin and Pertsov 2018, 130).

Another finding of the current study is the improved CPR skills of students who participated in the case group. Previous evidence has consistently revealed that simulation by using a mannequin results in enhanced knowledge and skills among nursing students (Aqel and Ahmad 2014, 399). In this vein, another study indicated that educating cardiopulmonary emergency care based on simulation increases knowledge and clinical practice competence among first-year nursing students (Kim and Jang 2011, 253). Similarly, Park (2015, 59) reported that educating CPR based on combining theoretical training and mannequin simulation may considerably increase knowledge, attitude, and self-efficacy for conducting CPR. Likewise, Tivener and Gloe (2015, 119) examined CPR skills in nursing students and revealed that there was a significant difference in the level of the CPR skills of students before and after the education. Roh, Lim, and Issenberg (2016, 57) reported that the score of knowledge and self-efficacy in clinical practice improved significantly after the educational intervention. Educating simulation-based CPR techniques along with clinical practice enhances learning and promotes self-efficacy among nursing students by interaction and getting the learners' feedback (Roh, Lim, and Issenberg 2016, 59).

Several factors may explain the effectiveness of education in enhancing students' CPR skills including the novelty of educational methods, allocating more time for practical exercise, work in a real setting, teamwork training and active interaction with nursing personnel (Onan et al. 2017, 141–142).

Another highlight from the present study is the enhanced skills of the students regarding ECG interpretation among the students who participated in the case group. Zhang and Hsu (2013, 251) reported that the lecture-based learning method and presentation of the self-learning handbook improved students' skills in ECG interpretation even after four months from the baseline (Zhang and Hsu 2013, 250). The use of lectures and simulated

scenarios was shown to significantly increase students' skills on how to interpret cardiac arrhythmia. Nevertheless, students trained by simulated scenarios had a considerable ability in interpreting cardiac arrhythmia. Although both methods of education had a positive effect on enhancing and maintaining the knowledge of interpreting cardiac dysrhythmia, it was shown that simulated scenarios was the preferred method (Tubaishat and Tawalbeh 2015, 1172), which is in line with our results. Similarly, Sumner et al. (2012, E8) showed that the simulation method had a positive effect on enhancing nurses' ability to diagnose cardiac arrhythmia. Knowledge and self-confidence of nurses regarding ECG interpretation have been showed to increase after taking an electronic education course along with the two hours of an instructor-led course (Spiva et al. 2012, 88). These results support the important role of education and the use of different teaching methods for ECG interpretation without any negative effect on the students' knowledge and self-confidence.

The results from the present study showed that the students' ability to administer common CCU drugs was remarkably enhanced among the students of the case group in comparison with the students of the control group. Likewise, the use of the combined method of lecture and simulated scenarios for students has shown to increase students' knowledge and self-confidence regarding the ability to administer essential drugs for children (Pauly-O'Neill and Prion 2013, 152). Interestingly, the level of drug errors of the students in intensive wards decreased considerably after participating in educational courses along with simulated scenarios (Ford et al. 2010, 1530). Meanwhile, Harris et al. (2014, 29) reported similar results to our results, where the use of review sessions through simulated scenarios for nursing students caused a considerable increase in the scores acquired in the ability of calculating and administering drugs.

Conclusions and Recommendations

The results of this study indicated that the educational pre-internship package for critical cardiac care had a positive effect on enhancing nursing students' self-efficacy. This programme as an innovative approach, which combined theory and practice, had a significant impact on preparing nursing students to deliver quality care in the intensive wards. Therefore students can enter the ward with greater preparation and competence. Furthermore, developing educational opportunities that are different from routine classes can be a suitable method for transferring the contents to the learners. The results of this research are applicable to nursing schools to enhance the quality of the clinical education. Such intervention can enhance the competence of nursing students and consequently improve their self-efficacy especially in critical cardiac wards, and eventually enhance the quality of care services, promote health, and contribute to increased life expectancy in patients requiring such care.

Acknowledgements

We would like to thank the UIMS for financially supporting this study. Finally, the authors appreciate all those who have collaborated with the researchers.

Limitations

An inadequate sample size and the lack of clarity about the trend of self-efficacy through time were the main limitations of this study, which suggest that future studies use more sample sizes. In addition, to increase the accuracy of evaluation after training, it is essential that students' self-efficacy be measured more than once.

References

- Abdal, M., N. M. Alavi, and M. Adib-Hajbaghery. 2015. "Clinical Self-Efficacy in Senior Nursing Students: A Mixed-Methods Study." *Nursing and Midwifery Studies* 4:1–8. <https://doi.org/10.17795/nmsjournal29143>.
- Akhu-Zaheya, L. M., M. K. Gharaibeh, and Z. M. Alostaz. 2013. "Effectiveness of Simulation on Knowledge Acquisition, Knowledge Retention, and Self-Efficacy of Nursing Students in Jordan." *Clinical Simulation in Nursing* 9 (9): e335–e342. <https://doi.org/10.1016/j.ecns.2012.05.001>.
- Aqel, A. A., and M. M. Ahmad. 2014. "High-Fidelity Simulation Effects on CPR Knowledge, Skills, Acquisition, and Retention in Nursing Students." *Worldviews on Evidence-Based Nursing* 11 (6): 394–400. <https://doi.org/10.1111/wvn.12063>.
- Baraz, S., R. Memarian, and Z. Vanaki. 2015. "Learning Challenges of Nursing Students in Clinical Environments: A Qualitative Study in Iran." *Journal of Education and Health Promotion* 4:52. <https://doi.org/10.4103%2F2277-9531.162345>.
- Baxter, R., and D. Edvardsson. 2018. "Impact of a Critical Care Postgraduate Certificate Course on Nurses' Self-Reported Competence and Confidence: A Quasi-Experimental Study." *Nurse Education Today* 65:156–61. <https://doi.org/10.1016/j.nedt.2018.03.004>.
- Cheraghi, F., P. Hassani, F. Yaghmaei, and H. Alavi-Majed. 2009. "Developing a Valid and Reliable Self-Efficacy in Clinical Performance Scale." *International Nursing Review* 56 (2): 214–21. <https://doi.org/10.1111/j.1466-7657.2008.00685.x>.
- Coster, S., M. Watkins, and I. J. Norman. 2018. "What is the Impact of Professional Nursing on patients' Outcomes Globally? An Overview of Research Evidence." *International Journal of Nursing Studies* 78:76–83. <https://doi.org/10.1016/j.ijnurstu.2017.10.009>.

- De Simone, S., A. Planta, and G. Cicotto. 2018. "The Role of Job Satisfaction, Work Engagement, Self-Efficacy and Agentic Capacities on Nurses' Turnover Intention and Patient Satisfaction." *Applied Nursing Research* 39:130–40. <https://doi.org/10.1016/j.apnr.2017.11.004>.
- Elhami, S., M. Heidari, M. Ban, S. Mosaviasl, and M. Khavasi. 2018. "The Factors Affecting Effective Clinical Education from the Viewpoint of Students, Nursing Trainers, and Nursing Staff." *Middle East Journal of Family Medicine* 16 (3): 259–64. <https://doi.org/10.5742/MEWFM.2018.93335>.
- Esmaeili, M., M. A. Cheraghi, M. Salsali, and S. Ghiyasvandian. 2014. "Nursing Students' Expectations regarding Effective Clinical Education: A Qualitative Study." *International Journal of Nursing Practice* 20 (5): 460–7. <https://doi.org/10.1111/ijn.12159>.
- Farsi, Z., N. Dehghan-Nayeri, R. Negarandeh, and S. Broomand. 2010. "Nursing Profession in Iran: An Overview of Opportunities and Challenges." *Japan Journal of Nursing Science* 7 (1): 9–18. <https://doi.org/10.1111/j.1742-7924.2010.00137.x>.
- Fero, L. J., C. M. Witsberger, S. W. Wesmiller, T. G. Zullo, and L. A. Hoffman. 2009. "Critical Thinking Ability of New Graduate and Experienced Nurses." *Journal of Advanced Nursing* 65 (1): 139–48. <https://doi.org/10.1111/j.1365-2648.2008.04834.x>.
- Ford, D. G., A. L. Seybert, P. L. Smithburger, L. R. Kobulinsky, J. T. Samosky, and S. L. Kane-Gill. 2010. "Impact of Simulation-Based Learning on Medication Error Rates in Critically Ill Patients." *Intensive Care Medicine* 36 (9): 1526–31. <https://doi.org/10.1007/s00134-010-1860-2>.
- Forouzi, M. A., R. Alimirzaei, M. Dehghan, and A. Heidarzadeh. 2018. "Evaluation of Nursing Students' Clinical Skills in Intensive Care Units." *Journal of Nursing Education* 6:57–63. <https://doi.org/10.21859/JNE-06068>.
- Fry, M., and C. MacGregor. 2014. "Confidence and Impact on Clinical Decision-Making and Behaviour in the Emergency Department." *Australasian Emergency Nursing Journal* 17 (3): 91–97. <https://doi.org/10.1016/j.aenj.2014.03.003>.
- Harris, M. A., L. Pittiglio, S. E. Newton, and G. Moore. 2014. "Using Simulation to Improve the Medication Administration Skills of Undergraduate Nursing Students." *Nursing Education Perspectives* 35 (1): 26–29. <https://doi.org/10.5480/11-552.1>.
- Honicke, T., and J. Broadbent. 2016. "The Influence of Academic Self-Efficacy on Academic Performance: A Systematic Review." *Educational Research Review* 17:63–84. <https://doi.org/10.1016/j.edurev.2015.11.002>.
- Ironside, P. M., A. M. McNelis, and P. Ebright. 2014. "Clinical Education in Nursing: Rethinking Learning in Practice Settings." *Nursing Outlook* 62 (3): 185–91. <https://doi.org/10.1016/j.outlook.2013.12.004>.

- Jamshidi, N., Z. Molazem, F. Sharif, C. Torabizadeh, and M. Najafi Kalyani. 2016. "The Challenges of Nursing Students in the Clinical Learning Environment: A Qualitative Study." *Scientific World Journal* 2016:1–7. <https://doi.org/10.1155/2016/1846178>.
- Jasemi, M., B. Whitehead, H. Habibzadeh, R. E. Zabihi, and S. A. Rezaie. 2018. "Challenges in the Clinical Education of the Nursing Profession in Iran: A Qualitative Study." *Nurse Education Today* 67:21–26. <https://doi.org/10.1016/j.nedt.2018.04.010>.
- Kim, Y. H., and K. S. Jang. 2011. "Effect of a Simulation-Based Education on Cardio-Pulmonary Emergency Care Knowledge, Clinical Performance Ability and Problem Solving Process in New Nurses." *Journal of Korean Academy of Nursing* 41 (2): 245–55. <https://doi.org/10.4040/jkan.2011.41.2.245>.
- Labrague, L. J. 2014. "Stress, Stressors, and Stress Responses of Student Nurses in a Government Nursing School." *Health Science Journal* 7 (94): 424–35.
- Le May, M., S. van Diepen, M. Liszkowski, G. Schnell, J-F. Tanguay, C. Granger, C. Ainsworth, J. G. Diodati, N. Fam, and R. Haichin. 2016. "From Coronary Care Units to Cardiac Intensive Care Units: Recommendations for Organizational, Staffing, and Educational Transformation." *Canadian Journal of Cardiology* 32 (10): 1204–13. <https://doi.org/10.1016/j.cjca.2015.11.021>.
- Lubbers, J., and C. Rossman. 2017. "Satisfaction and Self-Confidence with Nursing Clinical Simulation: Novice Learners, Medium-Fidelity, and Community Settings." *Nurse Education Today* 48:140–4. <https://doi.org/10.1016/j.nedt.2016.10.010>.
- Lyovkin, O., and V. Pertsov. 2018. "Simulation Training on the Emergency Medical Care." *Emergency Medicine* 128–31. <https://doi.org/10.22141/2224-0586.2.89.2018.126612>.
- Meyer, M. N., H. Connors, Q. Hou, and B. Gajewski. 2011. "The Effect of Simulation on Clinical Performance: A Junior Nursing Student Clinical Comparison Study." *Simulation in Healthcare* 6 (5): 269–77. <https://doi.org/10.1097/SIH.0b013e318223a048>.
- Mohamadirizi, S., S. Kohan, F. Shafei, and S. Mohamadirizi. 2015. "The Relationship between Clinical Competence and Clinical Self-Efficacy among Nursing and Midwifery Students." *International Journal of Pediatrics* 3 (6.2): 1117–23. <https://doi.org/10.22038/IJP.2015.5222>.
- Nobahar, M. 2016. "Competence of Nurses in the Intensive Cardiac Care Unit." *Electronic Physician* 8 (5): 2395–404. <https://doi.org/10.19082%2F2395>.
- Onan, A., N. Simsek, M. Elcin, S. Turan, B. Erbil, and K. Z. Deniz. 2017. "A Review of Simulation-Enhanced, Team-Based Cardiopulmonary Resuscitation Training for Undergraduate Students." *Nurse Education in Practice* 27:134–43. <https://doi.org/10.1016/j.nepr.2017.08.023>.

- Park, G. 2015. "The Effect of Basic Cardiopulmonary Resuscitation Training on Cardiopulmonary Resuscitation Knowledge, Attitude, and Self-Efficacy of Nursing Students." 56–60. <https://doi.org/10.14257/astl.2015.116.12>.
- Park, J. Y., C. H. Woo, and J. Y. Yoo. 2016. "Effects of Blended Cardiopulmonary Resuscitation and Defibrillation E-Learning on Nursing Students' Self-Efficacy, Problem Solving, and Psychomotor Skills." *Computers, Informatics, Nursing* 34 (6): 272–80. <https://doi.org/10.1097/CIN.0000000000000227>.
- Pauly-O'Neill, S., and S. Prion. 2013. "Using Integrated Simulation in a Nursing Program to Improve Medication Administration Skills in the Pediatric Population." *Nursing Education Perspectives* 34:148–53. <https://doi.org/10.5480/1536-5026-34.3.148>.
- Pike, T., and V. O'Donnell. 2010. "The Impact of Clinical Simulation on Learner Self-Efficacy in Pre-Registration Nursing Education." *Nurse Education Today* 30 (5): 405–10. <https://doi.org/10.1016/j.nedt.2009.09.013>.
- Roh, Y. S., E. J. Lim, and S. B. Issenberg. 2016. "Effects of an Integrated Simulation-Based Resuscitation Skills Training with Clinical Practicum on Mastery Learning and Self-Efficacy in Nursing Students." *Collegian* 23 (1): 53–59. <https://doi.org/10.1016/j.colegn.2014.10.002>.
- Rowbotham, M., and R. M. Owen. 2015. "The Effect of Clinical Nursing Instructors on Student Self-Efficacy." *Nurse Education in Practice* 15 (6): 561–6. <https://doi.org/10.1016/j.nepr.2015.09.008>.
- Shin, S., J-H. Park, and J-H. Kim. 2015. "Effectiveness of Patient Simulation in Nursing Education: Meta-Analysis." *Nurse Education Today* 35 (1): 176–82. <https://doi.org/10.1016/j.nedt.2014.09.009>.
- Spiva, L., K. Johnson, B. Robertson, D. T. Barrett, N. M. Jarrell, D. Hunter, and I. Mendoza. 2012. "The Effectiveness of Nurses' Ability to Interpret Basic Electrocardiogram Strips Accurately Using Different Learning Modalities." *Journal of Continuing Education in Nursing* 43 (2): 81–89. <https://doi.org/10.3928/00220124-20111011-02>.
- Stajkovic, A. D., A. Bandura, E. A. Locke, D. Lee, and K. Sergent. 2018. "Test of Three Conceptual Models of Influence of the Big Five Personality Traits and Self-Efficacy on Academic Performance: A Meta-Analytic Path-Analysis." *Personality and Individual Differences* 120:238–45. <https://doi.org/10.1016/j.paid.2017.08.014>.
- Sumner, L., S. M. Burke, L-T. Chang, M. McAdams, and D. A. Jones. 2012. "Evaluation of Basic Arrhythmia Knowledge Retention and Clinical Application by Registered Nurses." *Journal for Nurses in Professional Development* 28 (2): E5–E9. <https://doi.org/10.1097/NND.0b013e31824b41e1>.
- Tawalbeh, L. I. 2017. "Effect of Simulation on the Confidence of University Nursing Students in Applying Cardiopulmonary Assessment Skills: A Randomized Controlled Trial." *Journal of Nursing Research* 25:289–95. <https://doi.org/10.1097/JNR.0000000000000170>.

- Tivener, K. A., and D. S. Gloe. 2015. "The Effect of High-Fidelity Cardiopulmonary Resuscitation (CPR) Simulation on Athletic Training Student Knowledge, Confidence, Emotions, and Experiences." *Athletic Training Education Journal* 10 (2): 103–12. <https://doi.org/10.4085/1002103>.
- Tubaishat, A., and L. I. Tawalbeh. 2015. "Effect of Cardiac Arrhythmia Simulation on Nursing Students' Knowledge Acquisition and Retention." *Western Journal of Nursing Research* 37:1160–74. <https://doi.org/10.1177/0193945914545134>.
- Waltz, C. F., and B. R. Bausell. 1981. *Nursing Research: Design, Statistics and Computer Analysis*. Ann Arbor: F.A. Davis.
- Yousefy, A., A. Reza Yazdannik, and S. Mohammadi. 2015. "Exploring the Environment of Clinical Baccalaureate Nursing Students' Education in Iran: A Qualitative Descriptive Study." *Nurse Education Today* 35 (12): 1295–300. <https://doi.org/10.1016/j.nedt.2015.07.028>.
- Yuan, H., B. Williams, and J. Fang. 2012. "The Contribution of High-Fidelity Simulation to Nursing Students' Confidence and Competence: A Systematic Review." *International Nursing Review* 59 (1): 26–33. <https://doi.org/10.1111/j.1466-7657.2011.00964.x>.
- Zhang, H., and L. L. Hsu. 2013. "The Effectiveness of an Education Program on Nurses' Knowledge of Electrocardiogram Interpretation." *International Emergency Nursing* 21 (4): 247–51. <https://doi.org/10.1016/j.ienj.2012.11.001>.
- Zhao, F. F., X. L. Lei, W. He, Y. H. Gu, and D. W. Li. 2015. "The Study of Perceived Stress, Coping Strategy and Self-Efficacy of Chinese Undergraduate Nursing Students in Clinical Practice." *International Journal of Nursing Practice* 21 (4): 401–9. <https://doi.org/10.1111/ijn.12273>.