

Enhancement of Nursing Innovators among Nursing Students in Public Higher Education Institutions

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Abstract

Nursing innovators are people with the ability to create beneficial health innovations.

Consequently, developing nursing students to create innovative learning processes alongside the development of professional nursing skills is important. The purpose of this study was to determine the efficacy of an activity package in developing nursing innovators among nursing students in public higher education institutions. This quasi-experimental study was conducted at Rajamangala University of Technology Thanyaburi, Thailand, 2021. Thirty third-year undergraduate nursing students were randomly assigned to one group. The activity package based on design thinking model. Data were collected before, immediately after, and eight weeks after the intervention using “innovative knowledge” and “nursing innovative skills” questionnaires. The descriptive statistics, paired t-test, and analysis of variances with repeated measures were used to analyze the data in this study. The mean score of knowledge was significantly higher post-training (10.66 ± 1.88 vs. 16.93 ± 1.25 , $P = .000$). The mean score for nursing innovative skills was significantly higher before, immediately after, and eight weeks after the intervention. Nursing innovator skills can be developed by using an activity package to encourage nursing students to engage in innovative learning processes while also developing professional nursing skills. Administrators of academic facilities should set guidelines for organizing training activities with the aim of building nursing innovation for nursing students.

Keywords: Enhancement, Nursing innovators, Nursing student, Public higher education institutions

1. Introduction

At the moment, nursing instruction management is focused on having nursing students acquire research and innovation skills in conjunction with the development of occupational skills and bachelor's degree-professional standards in the field of nursing in terms of desired graduate qualifications requiring the use of research and innovation processes in solving nursing and health problems (Royal Thai Government Gazette, 2022; Ministry of Education, 2018). Although current advances in medical and other technologies have made more growth, the health problems of service recipients have grown in complexity. Therefore, the development of nursing students, apart from development in knowledge and occupational skills, requires the development of innovative skills among nursing students in combination with learning in both theory and practice. The curriculum must be focused on having nursing students possess cognitive processes and innovative skills such as the use of innovative cognitive processes in helping solve health problems to produce positive clinical outcomes (Limei et al., 2021). Every day, nurses around the world search for new guidelines in the development and improvement of nursing processes for good nursing quality, because that is the identity of nursing (Landis et al., 2021).

A nursing innovation is a modern concept, practice guideline, or invention that leads to change, improvement, and development in order to increase the efficiency and effectiveness of nursing in disease prevention, health promotion, treatment, and recovery (ICN, 2009). Because nurses' work requires the development and improvement of service quality, so patients recover from illness and injury in good health, which is considered routine work that must be performed every day, innovation is not a new concept in the nursing profession (Dil,

Uzun, & Aykanat, 2012). If nurses have competence in nursing innovation, they will be able to think of new methods, create new things, or make changes and improve nursing activities, so nurses work more efficiently with positive effects on patients and the nursing profession. Nurse leaders are in a unique position to help patients with many efforts. They are in responsible of new ideas which include taking care patient with confuse, solve a new problem (Azar, 2021). Furthermore, if nursing is viewed as being continuously innovative and changing (Rogers, 1992), core course objectives should develop nursing students with innovative competence in addition to the development of professional nursing skills because if nursing students have good competence in nursing innovation skills, it means we can produce professional nurses with knowledge about innovation, good innovative skills and positive attitudes with the ability to created new things of use in health. In addition, nursing innovators continue to be few and are insufficient to meet the needs for health system development. Therefore, nursing education management needs to be strict and give importance to the development of innovative skills for nursing students.

This article was written to present the development of an activity package for training aimed at enhancing nursing competence for nursing students by using Design Thinking (Gibbons, 2016) as a conceptual framework for developing training courses and Learning by Doing processes (Dewey, 1938; Wijan, 2012) for use as guidelines in organizing training to enhance nursing competence for nursing students to develop nursing graduates who possess quality nursing innovation competence with capacity for the future.

2. Method

2.1 Design

This was a one-group pretest-posttest quasi-experimental study. The intervention group received an activity package to investigate the effects of an activity package on nursing students' capacity building in nursing innovation. Data was collected using "innovative knowledge" and "nursing innovative skills" questionnaires before, immediately after, and eight weeks after the intervention.

2.2 Setting

This study was conducted in the Faculty of Nursing at Rajamangala University of Technology Thanyaburi, Pathum Thani, Thailand from October to December 2021.

2.3 Population and Sample

Thirty third-year undergraduate nursing students took part in the study. The students were enrolled in the 2021 academic year were chosen at random in this study.

2.4 Data Collection Tools

A nursing innovative skills assessment form was examined by 5 experts in a test of pre- and post-training knowledge regarding nursing innovations, who tested validity, item objective congruence (IOC), and offered recommendations on the nursing innovative skills assessment form, which was revised based on the expert recommendations. The instrument was then

tested on a group of 30 subjects who shared the same characteristics as the study's sample group in order to determine the reliability of the nursing innovative skills assessment form by calculating Cronbach's alpha coefficient (α -coefficient) (Cronbach, 1984).

2.5 Experimentation

The quasi-experimental research with a one-group pretest-posttest design was conducted to study the effects of an activity package on the innovative skills of nurses by comparing pre-and post-training scores. Then, after the experiment, test innovative knowledge and nursing innovative skills.

2.6 Data Analysis

The pre-and post-training knowledge was compared by using paired t-tests. The analysis of variances with repeated measures was used to assess nursing innovator skills before and after training.

2.7 Ethical Considerations

The Institutional review board on human subjects certified this study for ethics in research involving human subjects. RMUTT REC No. Exp 16/64, Rajamangala University of Technology Thanyaburi, on June 16, 2021.

3. Results

Table 1 shows that post-training scores on knowledge of nursing innovations were higher than pre-training scores, with a statistical significance of .05.

Table 1. Comparison of pre- and post-training knowledge of nursing innovations

	n	\bar{x}	S.D.	t	p
Pre-Training	30	10.66	1.88	-21.22	.000
Post-Training	30	16.93	1.25		

As shown in Table 2, the assessment of each nursing innovator skill based on the nursing innovator skills measurement revealed that the post-test mean scores were higher than the pre-test mean scores with a statistical significance of .05.

Table 2. The results of the analysis to finding the pre-test and post-test mean scores

Innovation Skills of Nursing Students	Pretest (n = 30)			Posttest (n = 30)		
	\bar{x}	S.D.	Level	\bar{x}	S.D.	Level
Associating	3.32	.18	moderate	4.51	.30	Highest
Leadership	3.26	.32	moderate	4.48	.29	Highest
Creative Thinking	3.16	.34	moderate	4.61	.31	Highest
Inspiration	3.23	.34	moderate	4.55	.32	Highest
Problem-solving	3.16	.28	moderate	4.60	.35	Highest
Overall	3.22	.06	moderate	4.55	.05	Highest

When nursing innovator skills of nursing students were compared before, immediately after, and 8 weeks after the intervention, it was discovered that immediately after and 8 weeks after the intervention were statistically significantly higher than before intervention at .05 (Table 3).

Table 3. Nursing innovator skills of nursing students before and after training were compared

Innovation Skills of Nursing Students	Before the intervention	Immediately after the intervention	8 weeks after the intervention	F	P value (within group)
Associating	3.32±.18	4.51±.30	4.55±.25	249.67	.000
Leadership	3.26±.32	4.48±.29	4.51±.35	85.02	.000
Creative Thinking	3.16±.34	4.61±.31	4.62±.37	133.51	.000
Inspiration	3.23±.34	4.55±.32	4.65±.33	98.81	.000
Problem-solving	3.16±.28	4.60±.35	4.71±.28	188.83	.000

4. Discussion

This study was to determine the efficacy of an activity package in developing nursing innovators among nursing students in public higher education institutions. The author designed an activity package aimed at building nursing innovator competence and composed of the following five modules: Module 1—Associating; Module 2—Leadership; Module 3—Creative Thinking; Module 4—Inspiration; and Module 5—Problem-solving. The researcher used Design Thinking as the conceptual framework for the study in organizing the activity package with Learning by Doing (Dewey, 1938; Wijan, 2012) and by using a variety of models and techniques such as Passion-Based Learning, Coaching, and Reflection, and Team-Based Learning, which corresponds with 21st Century learning that promotes and

supports learners in learning based on their interests with instructors as advisors who make suggestions and help in the design of learning activities, which will allow learners the opportunity to learn by doing. This corresponds with a study by Zenobia C. Y. Chan, who stated that nursing studies should design courses with enthusiastic learning aimed at promoting students in creative thinking and doing (Chan, 2013). Enthusiastic learning is the development of innovative thinking, which gives learners successful academic and professional experiences (Tantillo et al., 2017). Thus, in organizing the activity package in this study, the researcher conducted the study in steps with ongoing training activities by beginning with self-identity activities, inspirational activities, creative, innovative thinking activities, producing work by using the group process in which everyone in the group cooperates in producing work, thinking together, solving problems together and helping promote leadership. As the nursing students in this study worked together, as a team, they exchanged learning with cognitive processes conducive to creating innovations (Limei et al., 2021). The previous activities helped draw upon the capacity of the students who could engage in creating innovations through pieces of work. This corresponds with the concept of Wongyai and Patpon (2020), who stated that coaching is the development of a coachee by focusing on self-development based on a foundation of passion in personal development leading to the achievement of set goals. The coachee will draw upon personal capacity and use it to engage in unlimited learning and the creation of innovations (Wongyai & Patpon, 2020). The learning process of coaching and reflection is a technique that helps nursing students review, ponder, and reflect to gain understanding leading to the development of personal skills in various areas (Gibbs, 2001; Johns, 2017), which will give the nursing students self-confidence, belief in their capacity to create innovations, security, and inspiration in learning. This training arranged for passion-based learning, which promoted even more confidence and inspiration in learning among the nursing students (Wartiovaara, Lahti, & Wincent, 2019).

In terms of the effectiveness of the activity package aimed at enhancing competence in the nursing innovations of nursing students, the nursing students were found to have higher post-training scores for knowledge and skills in nursing innovation than pre-training scores with a statistical significance of .05. It can be said, therefore, that the nursing innovator competence of the nursing students was improved by the activity package, which can be explained as follows: After the nursing students enrolled in the training course with an instructor as the coach, they grew confident in drawing upon their capacity for creating innovations (Wongyai & Patpon, 2020). The inspiration was there in each of the nursing students, but it was not brought out for use as long as there were no appropriate opportunities or sufficient confidence to do it. When the instructor used coaching and reflection, they gained increased confidence and inspiration, which helped the students believe in themselves and their capacity and ability to create innovations. They also recognized the value of creating innovations, which became accepting of risks and made them dare to confront problems arising (Wartiovaara, Lahti, & Wincent, 2019; Dyer, Gregersen, & Chistensen, 2011). When the students drew upon their maximum capacity and ability used in learning, they were able to engage in creative thinking in the creation of unlimited innovations. Furthermore, the design of this training course was learning by doing. For example, three

groups of learners who were interested in creating innovations together had the same goal of producing a box for testing cervical dilation during childbirth. The concept in the aforementioned production occurred as a result of creative thinking and innovation together in the form of team learning (Wongyai & Patpon, 2021; Asurakkody & Kim, 2020). Their reason for wanting to develop the equipment was to learn about cervical dilation during childbirth. As everyone in the group was helping to produce the work, the learners gained problem-solving skills when problems occurred during the production through group processes and gained associating skills. The training also promoted leadership for the learners. Similarly, quasi-experimental studies (Liu, Wang, Chen, & Chao, 2020) conducted to study the effects of creativity training on teaching creativity for nursing students discovered that creativity training courses can increase teaching behaviors as well as perceptions of self-efficacy regarding teaching for creativity, which could foster student creativity (Liu, Wang, Chen, & Chao, 2020). Nurses are faced with educating patients and using healthy living apps in routine work. They are at the heart of healthcare innovations (Brady & Byrne, 2022).

5. Conclusion

Nursing innovator skills can be developed by using activity packages or training courses to teach nursing students how to engage in innovative learning processes while also developing professional nursing skills. Academic facility administrators should establish guidelines for organizing training activities to foster nursing innovation among nursing students.

6. Limitations

The present study involved organizing training activities under the circumstances surrounding COVID-19 outbreaks. Therefore, the training activities were divided into two training models, namely lecture training by using the method of online training, and experimental training by having the sample train by doing in the production of work. Next, the works invented were presented online. The assessment of the results, therefore, involved multiple steps. Thus, future studies should involve post-training follow-up at 6 months to 1 year after the training to assess whether the nursing innovator skills of the coaches have increased.

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