

Entrepreneurial Competence and Readiness among Medical Surgical Nursing Students: Effect of an Educational Program

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Abstract

Background: Entrepreneurship is highly encouraged in today's world and becomes area of the crucial channels for the development of economies of countries. Nursing Entrepreneurship presents an opportunity to explore nursing's professional potential in practice and increase recognition of the value of nursing. It is not at all about starting new business, but is about making student creative, opportunity oriented, proactive, and innovative in all walks of life.

Objective: This study aimed to examine the effect of an educational program on entrepreneurial competence and readiness among medical surgical nursing students.

Methods: A pre-experimental design (pre-posttest) was utilized with a convenient sample of 290 medical surgical nursing students (male and female) enrolled in the entrepreneurship course and were willing to participate (the academic year 2022-2023). An adapted Entrepreneurial Competence and Readiness Questionnaire was utilized. Cronbach's Alpha was utilized to ensure internal consistency of the instrument. Descriptive statistics and paired t-test were utilized to analyze the data.

Results: There was a statistically significant difference between pre and post-program among students regarding entrepreneurial competence and level of readiness ($t = 124.5$, $p = 0.000$).

Conclusion: A university entrepreneurship educational program has an obvious effect in increasing competency and level of entrepreneurial readiness among medical surgical nursing students. *Recommendation:* Entrepreneurial educations should be included within the curricula of all universities.

Keywords: Educational program, Entrepreneurship, Entrepreneurial Competence, Readiness.

Introduction

Entrepreneurship is the realization or introduction of something new and different from what is traditionally done, based on the identification of unmet opportunities or needs (Henrekson, Sanandaji, 2020). Accordingly, an entrepreneur is a creator who implements changes in the economy by introducing a new product or new technique of production. Entrepreneurs are considered the backbone of economies as they come up with innovative

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business ideas which ultimately contribute to social and economic growth (Ali, Abd Allah, & Al-hosany, 2020; Israr&Saleem, 2018).

Entrepreneurship offers a career option for nurses seeking autonomy in their practice. In this respect, nursing entrepreneurship can provide nurses with self-employment opportunities that allow them to pursue their personal vision and passion using innovative approaches (Ambad, & Damita, 2016). A nurse is defined as an entrepreneur when offering different nursing services in private-sector markets namely: care, education, research, and administrative work. Nurse entrepreneurs fill the gaps in the current healthcare delivery system by supporting the development of targeted products and services, enhanced technology, software, and safety systems. This development provides the health system with an opportunity to address needs within the health system by utilizing the services of private nurse consultants and practitioners (Arnaert, Mills, Bruno, & Ponzoni, 2018).

For entrepreneurial performance, specific skills and competencies are needed (Trotte, et.al. 2021). Entrepreneurial competence is defined as an individual characteristic, such as knowledge, skills, motives, traits, social roles, and self-images that can result in a new creature. While entrepreneurial readiness is defined as a readiness or preparedness of an individual in pursuing a business. Lack of competence in entrepreneurship is a major barrier for nurses to become entrepreneurs (Devi, Ghazi, Ariffin, & Ab Yajid, 2020). Change and promotion of entrepreneurship culture can be conducted through educational programs. Therefore, including entrepreneurship educational programs could motivate and support entrepreneurial behavior among students. Moreover, it enhances students' entrepreneurial competence and readiness (Putra, Widiyanti, Sutadji, & Nurhadi, 2021; Peterman, & Kennedy, 2013).

Innovation and entrepreneurship are important aspects that have been long recognized as the interest of all governments to promote new ventures in business as a mean to enhance economic growth for the nation and create jobs to help to solve the problem of unemployment. (Jahani, Babazadeh, Haghghi, & Cheraghian, 2018; Ross, 2017; Saeed, Yousafzai, Yani de Soriano, & Muffatto, 2015).

One of the missions of Cairo University is to encourage the social and economic development of its surroundings through venture creation training and entrepreneurship development. Therefore, an entrepreneurship educational program was introduced into the curriculum for the second-year students in all faculties of Cairo University. Such courses play a very important role in giving students technical knowledge about entrepreneurship and through it they also increase their self-efficacy perceptions and self-growth (Devi, Ghazi, Ariffin, & Ab Yajid, 2020). In addition, Trotte, et.al. 2021 highlighted the importance of the investment of universities in the development of an entrepreneurial culture in higher education in Nursing. Therefore, entrepreneurship course can present an opportunity to explore nursing's professional potential in nursing practice and increase recognition of the value of nursing services. Through entrepreneurship, nurses gain influence in providing health services in new ways, which can contribute to a better quality of care, access to necessary services, and increased patient empowerment.

Entrepreneurship applies to Nursing. The nurse can have a company to work directly with patient care or provide consultancy services. It also highlights its potential in the development of technologies and the search for innovations in care processes within health services. In addition, it acts as a transformation agent and seeks better conditions for the care of individuals, families, and communities in the health systems (Copelli, Erdmann, & Santos, 2019). Egyptian government supports entrepreneurship as it provides an avenue that drives innovation and creates employments that are essential for economic transformation and advancement.

Changes in nursing and health care have created new opportunities and made a greater diversity in nurses' roles and significant advances in nursing knowledge and

education (Siegel, & Wright, 2015; Khan, 2013). There is a need for entrepreneurial nurses within health services to maintain and enhance the quality of care.

Providing entrepreneurial education could encourage and enhance students' entrepreneurial competence and readiness. As a result of entrepreneurship education, students are supposed to act and react spontaneously in an entrepreneurial way. Hoping that entrepreneurship education will lead to entrepreneurship as spontaneous or natural behavior (Devi, Ghazi, Ariffin, & Ab Yajid, 2020; Jahani, Babazadeh, Haghghi, & Cheraghian, 2018; Peterman, & Kennedy, 2013; Mohamed, Rezai, Shamsudin, & Mahmud, 2012).

The findings of the current study will help in identifying the benefits of the course and discover changes in students' entrepreneurial abilities. Furthermore, results could provide evidence-based which in turn could support integrating the entrepreneurship course into all nursing curricula. Therefore, the aim of this study is to examine the effect of an educational programs on entrepreneurial competence and readiness among nursing students.

Research Hypothesis

To fulfill the aim of the current study, the following hypothesis was postulated:

H: The entrepreneurship educational program will affect the medical- surgical- nursing students' entrepreneurial competence and readiness.

Operational Definitions

Entrepreneurial competence and readiness: referred to students' characteristics and traits, as measured by the Entrepreneurial Competence and Readiness Questionnaire (Abou-Naaem & Enaba, 2019).

Entrepreneurship Educational Program: One semester (14 weeks) entrepreneurship educational course program that was introduced into the curriculum for all faculties belongs to Cairo University for the second level students. The university educational program included the following information: main concepts of entrepreneurship; characteristics and capabilities of the entrepreneur; types of small entrepreneurial businesses and start-up methods; generating the entrepreneurial idea and its feasibility study; enterprise strategic plan; entrepreneurial business establishment and preparation; and professional management of the entrepreneurial enterprise.

Methods

Study Design:

A pre-experimental (pre-posttest design) was utilized to meet the aim of the present study.

Setting:

The current study was conducted at the Faculty of Nursing, Cairo University.

Sample/ participants

A convenience sample of second-year-medical surgical nursing male and female students who enrolled for the entrepreneurship course and accepted to participate (academic year 2022-2023) were recruited for the purpose the current study. The total number of students who enrolled in the course was 310 students and were invited to participate in the study. The number of students who were willing to participate as well responded to the pre-program questionnaire was 290 students with response rate 93.5%. While the number of students who responded to the post-program questionnaire was 285 students, so the dropped participants were 5 students.

Instruments:

Two instruments were used: a) Students' demographic data form that was developed by the researchers and consisted of two questions regarding gender and age, and b) Entrepreneurial Competence and Readiness Questionnaire: this tool was adapted from the questionnaire prepared by professor Moataz Sayed Abdulla included in the entrepreneurship book that was given to students, which was written and edited by a committee of professors at Cairo university (Abou-Naaem& Enaba, 2019). It was adapted to be 36 questions distributed into 12 main competencies as follows: Initiation (3 questions); Self-confidence (3 questions); Curiosity (2 questions); Non-conformism (3 questions); Leadership (2 questions); Higher achiever (3 questions); Innovation and creativity (4 questions); Intellectual flexibility (2 questions); Critical thinking and problem-solving (6 questions); Persistence (2 questions); Technical competence in a special field (2 questions); and Challenging and risk taking (4 questions).

Also responses to questions were modified to be rated on a 5-point Likert scales follows: strongly disagree (1), disagree (2), neutral (3), agree (4), and strongly agree (5). Therefore, scores ranged from 36-180. Scores from 36-180 were divided into four quarters; 36- less than 72, 72- less than 108, 108- less than 144, and more than 144. Total scores that was 144 or more were considered excellent potential to be an entrepreneur, scores from 108-143 were considered very good potential to be an entrepreneur, while scores from 72-107 were considered good potential to be an entrepreneur, and finally scores less than 72 are considered need to study and build up entrepreneurship skills. Questionnaire was used in English form.

Content validity of the study tools was assured by a panel of three experts from faculty members in the medical surgical nursing and nursing administration field from Faculty of Nursing Cairo University. The experts examined the tools for content coverage, clarity, wording, length, format, and overall appearance. Modifications were done based on the experts' comments. Reliability was established using Cronbach's Alpha that yielded 0.96.

Ethical Considerations

Approvals were obtained from the Research Ethics Committee at the Faculty of Nursing, Cairo University (IRB 2019041701) and also the vice dean for students' affairs. Objectives, nature, and methods of the study were explained to participant students by researchers in the first online meeting ensuring that participation in the study had no relation to course grades. Until data collection was finished, participants were free to decide whether to participate and to continue, refuse, or discontinue at any time. Acceptance of the participants to fill in the form through Google link implied approval to participate in the study. Anonymity and confidentiality of the collected data were assured through coding as well as keeping the documents file in locked folder with a password.

Data collection

The current study was carried out at the Faculty of Nursing, Cairo University on the 1st semester of the academic year 2022-2023. Once official permissions were granted from the Research Ethics Committee at the Faculty of Nursing, Cairo University and the vice dean for students' affairs to proceed with the study, data were collected through three phases as follows:

a) First phase (Pre-program phase), the researcher developed Google form questionnaires including the following: instruction details of nature and purpose of the study; requiring student's E-mail; one question asking about gender (Instrument I); and 36 questions (Instrument II: Entrepreneurial Competence and Readiness Questionnaire). Then, the researchers sent the Google form link to all students to be filled after the first online meeting that was an introduction to the course and what is entrepreneurship and how to be applied in nursing. Participants reported that filling the questionnaire took about 15-20

minutes. Responses of the pre-program questionnaire were submitted through one week before the second online meeting.

b) Second phase (Implementation phase) in which the researchers applied the program, it was conducted to all students through an online platform (Microsoft teams) for 12 weeks, two hours per week based on the students' schedule. The researchers were trained before through attending a weekly educational session presented by professionals in the entrepreneurship field at Cairo University for one academic year. Sessions guided the researcher to teach the program. The university educational program included the following information: main concepts of entrepreneurship; characteristics and capabilities of the entrepreneur; types of small entrepreneurial businesses and start-up methods; generating the entrepreneurial idea and its feasibility study; enterprise strategic plan; entrepreneurial business establishment and preparation; and professional management of the entrepreneurial enterprise. During the teaching process the researchers used to give examples on international and national entrepreneurs, and nurse entrepreneurs;

c) Third and last phase (post-program phase), the researchers sent the students the post program questionnaire link (Tool II) after the last lecture to be filled and submitted within seven days after the last meeting.

Data Analysis

The collected data were analyzed using Statistical Package for Social Science (SPSS, V.26) (IBM,2019). Data were presented using descriptive statistics in the form of frequencies, percentages, means, mean percent and standard deviations as well as Pearson, Biserial, point-biserial correlation and paired t-tests. Statistical significance was considered at a P value less than or equal to 0.05.

Results

Table (1): Percentage distribution of personal data of the study participants (nursing students).

Personal data		Pre-program n= 290		Post program n= 285	
		f	%	f	%
Gender	Male	98	33.8	93	32.6
	Female	192	66.2	192	67.4
Age	20 years	39	13.4	36	12.6
	21 years	191	65.9	177	62.1
	22 years	60	20.7	72	25.3

n: sample size, f: frequency, %: Percentage

Table (1) shows that more than two- thirds (66.2%) of the pre-program participants were female nursing students. And more than two- thirds (67.4%) of the post-program participants were also female. Regarding the age of participants, the majority of students in pre- and post-program were 21 years old.

Table (2): Mean, standard deviation (SD), and mean Percent (%) of the Entrepreneurial competence pre and post-program among students

Entrepreneurship competencies	No. of items	Pre-program (N=290)			Post-program (N=285)			P-value
		Mean	SD	Mean %	Mean	SD	Mean %	
1. Initiation	3	10.75	2.49	71.70	10.91	2.48	72.74	0.450
2. Self confidence	3	11.21	2.43	74.73	11.29	2.41	75.29	0.677
3. Curiosity	2	7.48	1.67	74.86	7.54	1.68	75.40	0.699
4. Non-conformism	3	9.82	2.46	65.49	10.56	2.41	70.40	0.000*
5. Leadership	2	6.82	1.72	68.27	7.19	1.71	71.92	0.011*

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6. Higher achiever	3	9.50	2.72	63.35	10.26	2.62	68.44	0.001*
7. Innovation and creativity	4	14.38	3.13	71.93	14.88	3.08	74.43	0.054*
8. Intellectual flexibility	2	7.37	2.87	73.72	7.45	1.62	74.52	0.681
9. Critical thinking and problem solving	6	22.17	4.75	73.91	22.82	4.46	76.08	0.092
10. Persistence	2	7.37	1.67	73.75	7.28	1.77	72.87	0.541
11. Technical competence in a special field	2	7.69	1.12	76.93	8.05	1.13	80.52	0.000*
12. Challenging and risk taking	4	14.41	3.30	72.06	14.62	3.26	73.10	0.450

*Significant at p-value <0.05

Table (2) illustrates that there were differences in most of competencies' mean score between the pre and the post-program, however, it was noticeable that the mean scores of some competencies were increased from pre-program to post-program such as non-conformism (9.82 ± 2.46 and 10.56 ± 2.41); leadership (6.82 ± 1.72 and 7.19 ± 1.71); higher achiever (9.50 ± 2.72 and 10.26 ± 2.62); critical thinking and problem-solving (22.17 ± 4.75 and 22.82 ± 4.46); and technical competence in a special field (7.69 ± 1.12 and 8.05 ± 1.13).

Concerning the mean percent, the highest mean percent of the pre-program competencies were for technical competence followed by curiosity; self-confidence; critical thinking and problem-solving; persistence; and intellectual flexibility. While the highest mean percentage of the post-program competencies were for technical competence followed by curiosity; and critical thinking and problem-solving.

Also, table (2) shows that there was a significant statistical difference in students' competencies pre- and post-program in non-conformism (P= 0.000), leadership (P= 0.011), higher achiever (P= 0.001), innovation & creativity (P= 0.054), and technical competence (P= 0.000).

Table (3): Difference between pre- and post-program regarding entrepreneurial competence and level of readiness among students using paired t-test.

	Pre-course group	Post-course group	t-test	p-value
	$\bar{x} \pm SD$	$\bar{x} \pm SD$		
Competencies and readiness for entrepreneurship	129.02 \pm 24.7	132.89 \pm 25.1	124.5	0.000

*Significant at p-value <0.05

Table (3) shows that there was a statistically significant difference between pre and post-program among students regarding entrepreneurial competencies and level of readiness for (t = 124.5, p= 0.000). And the total mean score of the post-program (132.89 \pm 25.10) was higher than the total mean score of the pre-program (129.02 \pm 24.71).

Table (4): Percentage distribution of pre and post-program regarding entrepreneurial level of readiness among students

Level of readiness	Pre-program (N=290)		Post-program (N=285)		P-value
	F	%	F	%	
Excellent potential to be an entrepreneur	67	23.1	106	37.2	0.046
Very good potential to be an entrepreneur	192	66.2	140	49.1	
Good potential to be an entrepreneur	18	6.2	29	10.2	
Need to build up an entrepreneurship skills	13	4.5	10	3.5	

*Significant at p-value <0.05

Table (4) shows that about two-thirds (66.2%) of the students' pre-program had a very good potential to be an entrepreneur. While only 23.1% of the students' pre-program had an excellent potential to be an entrepreneur. Concerning the post program, about half (49.1%) of the students had a very good potential to be an entrepreneur. While 37.2% had an excellent potential to be an entrepreneur. There was a statistically significant difference among students' level of readiness for entrepreneurship (p= 0.046).

Table (5): Correlation between students' demographic data (gender, age, and level of education) and readiness for entrepreneurship (r: point-biserial correlation for gender, Pearson correlation for age)

Readiness for entrepreneurship	Pre-course group		Post-course group		R	p-value
	R	p-value	R	p-value		
Gender	0.006	0.919	0.041	0.486	0.025	0.545
Age	0.043	0.481	0.065	0.274	0.057	0.174

*Significant at p-value <0.05

Table (5) illustrates that there was no statistically significant relationship between students' gender and readiness for entrepreneurship (r= 0.025, p= 0.545). Also, there was no statistically significant relationship between students' age and readiness for entrepreneurship (r= 0.057, p= 0.174).

Discussion

Entrepreneurship in nursing is important for the expansion of the profession as science, technology, and innovation. For an entrepreneurial performance, specific competencies are needed, these competencies contribute to the student's readiness to be a nurse entrepreneur. Therefore the aim of the current study was to examine the effect of educational program on entrepreneurial competencies and readiness among medical-surgical- nursing students.

Currently, many researchers support the importance of including an entrepreneurship program/ education in universities to encourage students to start their entrepreneurial activities. Actually, the current study findings revealed a statistically significant difference regarding entrepreneurial competence and the level of readiness between pre and post-program among medical surgical nursing students. These results are consistent with Ali, Abd Allah, & Al-hosany, 2020 who concluded that entrepreneurship orientation program affects entrepreneurship intention positively. In addition, the results are matching Ismail, Zain, &Zulihar, (2015) who explored that entrepreneurial exposure or education increases the level of entrepreneurial competence of a person.

Regarding current study students' personal data, participants were second year students, their ages were between 20-22 years old, however the majority of them were 21 years old. Most of them were female students. Apparently, the current study finding revealed no association between students' gender and the level of entrepreneurial readiness. This is similar with the study of Marvin, Pentang, & Flora, 2014 which showed no relation between gender and entrepreneurial readiness level. However, this finding is inconsistent with Devi, et al. 2020 who concluded that the level of entrepreneurial competence has a significant relationship with gender. This result could be explained in light that the majority of the current study participants were females so the sample was not homogenous. Therefore, this result calls for further research on the impact of gender on entrepreneurial readiness. Moreover, the study findings revealed no significance difference between students' age and level of entrepreneurial readiness. This is consistent with Abd. Samad, et. al. 2019 who concluded that no difference was found on entrepreneurial readiness between participants of different age groups indicating that age may not be a contributing factor towards entrepreneurship readiness.

Apparently, the current study findings showed a high level in most of the competencies before giving the program such as technical competence in special field; curiosity; self-confidence; critical thinking and problem-solving; persistence; and intellectual flexibility as well. These results could be due to the fact that such competencies might be gained from the previous level of education fundamentals of nursing course. Moreover, this could be explained in light of the presence of some other factors that could be a reason for increasing students' competencies other than the course such as family background, income, marital status, culture, or/ and students' experience. However, the current study findings illustrated a statistical difference between competencies before and after the program, some competencies were increased and got a higher percentage after giving the program such as technical competence; non conformism; higher achiever; leadership; critical thinking & problem solving; and innovation. This results could be reflected to the effect of the course. This results are in agreement with Putra, Widiyanti, Sutadji & Nurhadi, (2021) who concluded that entrepreneurial orientation had an effect on entrepreneurial competencies and readiness among students, particularly critical thinking skills.

Concerning the level of readiness among the current study students, the study findings showed an obvious increased in number of students who had an excellent potential to be an entrepreneur and number of students who had good potential to be an entrepreneur after the program compared with before. On the other hand, the results showed a decreased number of students who need to build up entrepreneurship skills after the program. This could be due to the effect of the knowledge gained from the program. The result is supported by Rauch, & Hulsink, (2015) who mentioned that entrepreneurship education is effective, and students participating in entrepreneurship education showed an increase in attitudes and perceived behavioral control. Furthermore, they have higher entrepreneurial intentions at the end of the program.

Contrarily, the findings revealed decreased in number of students who had a very good potential to be an entrepreneur after having the program. This could be explained in light of that some of the students may had less insight of their capabilities and readiness to be an entrepreneur or they were having incomplete, unclear picture of the entrepreneurship concept. Although the current study findings showed increasing in students' competencies after conducting the program. nevertheless, the findings suggest another study to examine the factors that could affect students' entrepreneurial competence and readiness.

Conclusion

Nursing Entrepreneurship presents an opportunity to explore nursing's professional potential in nursing practice and increase recognition of the value of nursing services. The present study concluded that the Cairo university entrepreneurship educational program has an obvious effect in increasing competency and level of entrepreneurial readiness among students enrolled in the course which could help them in their practice field and encourage them to become future entrepreneurs in their work specialties.

Limitations of the study

The use of a convenience sample of participants makes the results less generalizable to all nursing students' population. In addition, the number of variables that examined in this study limited the study's scope. The researchers acknowledge the existence of other important factors that could affect entrepreneurial readiness. Furthermore, because the data collected in this study were based on online self-reports, there is a risk of self-reporting bias.

Recommendation

Entrepreneurship education at higher-education institutions is recommended to emphasize entrepreneurial competencies to improve students' self-belief in their ability to conduct entrepreneurship-related tasks. And, to motivate young graduates to start their own personal practice which had positive effects on the economy and health of the country and nursing career. Therefore, the current study recommends the following:

- 1- Entrepreneurial education should be included within the curricula of all universities, especially for nursing to encourage students to start their entrepreneurial activities.
- 2- Replication of the study on a larger sample size to improve the generalizability of the findings.
- 3- Replication of the study in other settings, contexts, and countries to validate the findings of the current study.
- 4- Replication of the study considering additional variables/ demographic variables that could affect students' response.

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