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## **Abstract:**

**Background:** Nursing entrepreneurship presents as a viable and attractive approach for nursing practice that serves to reinstate professional autonomy, advance nursing professionalism, and engage in health system transformation.

**Aim:** the study aimed to assess effect of entrepreneurship educational program on head nurses' entrepreneurial knowledge, attitude and competencies.

**Design:** A quasi-experimental research design was utilized in this study. **Setting:** The study was conducted at Al Azher University Hospitals, Cairo, Egypt.

**Subjects:** A simple random sample (86) from head nurses was included.

**Data collection tools:** Three tools were used for data collection (1) Entrepreneurship knowledge Questionnaire, (2) Entrepreneurship attitude Questionnaire (3) and Entrepreneurship skill Questionnaire.

**Results:** There was a highly statistically significant difference in total knowledge, attitude and skill pre, post and follow up applying entrepreneurial educational program. There were significant statistical positive correlations between head nurses' total entrepreneurial knowledge and attitude, and entrepreneurial attitude and competencies of head nurses.

**Conclusion:** The educational program for head nurses was effective and improved their level of entrepreneurial knowledge, attitude, and competencies.

**Recommendation:** Hospital administrators should create policies and strategies to support career growth and developmental opportunities of entrepreneurial nurses. Also create atmosphere that will support the autonomy of the profession and colleague solidarity without ignoring the traditional roles of nurses.

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**Keywords:** Entrepreneurship, Competencies & Head nurses

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### Introduction:

Nursing entrepreneurship represents an important, developing role for nursing that inspires creativity and advances scientific knowledge. In the 21st century, a growing aging population, prevalent chronic illness, advanced technology, higher demands for quality health care, limited resources, healthcare workforce shortages, inequities and disparities in healthcare delivery. Entrepreneurship in healthcare plays a significant role in the economy, with healthcare businesses having a prominent role in the transformational changes taking place in the public and private healthcare sectors. (*Thepna et al., 2023*).

To adapt to shifting paradigms, nurses need to be capable of becoming leaders and managers, entrepreneurs, and employers on healthcare teams. The unique experience of nurses makes them one of the healthcare personnel who have the requisite competencies for entrepreneurship, as they can generate opportunities focused on health activities as healthcare experts, while also contributing innovative approaches and solutions to health problems in diverse social contexts (*Colichi et al., 2019*).

Entrepreneurial competencies are a combination of body of knowledge, set of skills and cluster of appropriate traits that an individual possesses. Entrepreneurial competencies are seen as crucial for business start-up, growth and success. Therefore understanding entrepreneurial competence is important in entrepreneurship practice, research and policy. The numerous entrepreneurial competencies include opportunity recognition, entrepreneurial leadership and marketing competencies (*Pratikto et al., 2023*).

A leader with entrepreneurial skills can recognize potential opportunities, gather necessary effective leadership expertise, and strategically take risks to create new markets for innovative products, processes, and services. Moreover, an entrepreneur is an individual who employs diverse leadership strategies to strategize, supervise, and undertake occupational hazards while generating benefits for their organization (*Castro et al., 2020*).

Nursing education must be based on creativity, innovation, and entrepreneurship to meet the labor market's needs and the rapid changes in the health area. Moreover, entrepreneurship can help develop skills related to caring management, leadership, conflict management, and emotional intelligence, increasingly, valued in nurses' training and performance (*Arnaert et al, 2018*).

Hence, a remarkable reform and innovation should be made in nursing education leadership in the future nursing practice. With respect to the utilization of entrepreneurship principles in resolving the health problems, innovative and creative nurse entrepreneurs along with the early identification of health problems and the application of efficient care approaches. (*Institute of Medicine, 2010*).

### Significance of the study

Nursing Entrepreneurship presents an opportunity to explore nursing profession and increases value of nursing services. Also, changes in nursing and health care makes a greater diversity in nurses' roles and significant advances in nursing knowledge and education (*Badawi, 2019*).

In this context, The Global Entrepreneurship Monitor (GEM) Egypt National Report revealed that over 73% of Egyptians view entrepreneurship as a favorable career option. However, a significant proportion of Egyptians, at over 30%, are deterred from starting a new business due to factors such as fear of failure, inadequate support, and insufficient business skills. Therefore, it is imperative to conduct this study to investigate effect of entrepreneurship educational program on head nurses' entrepreneurial competencies.

### Aim Of The Study

The study was aimed to assess effect of entrepreneurship educational program on entrepreneurial head nurses knowledge, attitude and competences through:

1. Assess head nurses knowledge toward entrepreneurship pre and post program implementation.
2. Assess head nurses attitudes regarding entrepreneurship pre and post program implementation.
3. Determine head nurses entrepreneurial skill level pre and post program implementation.

### Subjects And Methods

#### Research Design:

Quasi –experimental design was conducted to the study. Quasi-experimental one group pretest-posttest design will be utilized to fulfill the aim of the study.

#### Setting

Al Azher University Hospitals, Cairo, Egypt.

#### Subjects:

The subject for the study was selected by simple random sample from head nurses which working at Al Azher University Hospitals where head nurses are working, during the data collection period and the required sample size was consisted (86) head nurses.

#### Tools of Data Collection:

The data of this study will be collected through three tools namely;

**Tool (I) - Entrepreneurship knowledge Questionnaire:** This tool will be developed by the researcher based on literature review (*Hagen, 2013 & Abun et al., 2018*): To assess knowledge of head nurses regarding entrepreneurship, it will consist of two parts:

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- **Part one:** Socio-demographic characteristics of head nurses such as age, gender, and previous training regarding entrepreneurship.
- **Part two:** To assess head nurses knowledge regarding entrepreneurship. It composed of (10) multiple choice questions. Every question had three choices. Only one choice is right. It was related to entrepreneurship definition, objective and skill. Response were measured on 2-points (0= incorrect) and (1=correct).

**Entrepreneurship Attitude Questionnaire:** it was developed by **Abun et al., (2017)** to assess head nurses attitude regarding Entrepreneurship. It consists of (49) items, divided into five domains namely: Need of achievement (10 items), Need for autonomy (10 items), Creative Tendency (9 items), Calculated Risk Taking (10 items) and Drive and Determination (10 items). Head nurses rated each statement of the scale using a five-point Likert scale.

**Entrepreneurship skills Questionnaire:** This tool was developed by the researcher based on literature review (**Nongsuwan et al., 2017 & Linan, 2008**). To assess head nurses skills of entrepreneurship. It consists of (31) items, divided into three domains namely: Entrepreneurial Leadership (18) items, which divided into three dimension (strategic factors, communication factors and motivational factors). Each dimension consists of 6 items. The second domain is opportunity recognition (7 items), the third domain is market awareness (6 items). This instrument was scored through 5- points Likert scale.

### Validity and Reliability

The tools of data collection were tested for their content and face validity sheet by a jury of five experts specialized in nursing administration from two different universities ((2) professors of nursing administration of Helwan university and (3) professors of nursing administration of Cairo university).The reliability of tools was tested entrepreneurship knowledge (0.834), attitude (0.780), and competences (0.981).

### Pilot Study

A pilot study was carried out with 10%of the study sample (9) head nurses to test the tools clarity, understanding, applicability and to estimate the consumed for filling in the forms.

### Fieldwork

The actual fieldwork started at the beginning of December 2021 and was completed by beginning of May 2022. The researcher met the nursing Directors and the hospital managers to explain the aim of the study to gain their approval on data collection. The researcher explained the course and collected data from selected hospitals (2days /week) for (4.5hours/day) for 6 weeks by herself through meeting the subjects and explaining the purpose of the study to them in the study settings.

### Administrative Design

An official letters were issued from the Faculty of Nursing, Zagazig University to gain permission from the hospital administration and the nursing director. The purpose of the study and its procedures were explained to them for getting their consent and cooperation.

Data entry and quantitative data analysis were done by the SPSS Version 24. Data were presented as mean and standard deviation (SD). A chi-square (X) statistical value used to measure how a modal compares to actual observed data. The one- way ANOVA analysis (F-test) was used to determine whether statistically significant differences between two or more independent groups. Pearson correlation coefficient was used to determine significant correlations between the variables. The significance level was set at  $P < 0.05$ .

### Results

**Table (1)** shows that almost all (96.5%) of the head nurses were 31-40 years old, the great majority (93%) of them were females, about three fifths (59.3%) of them were married, about two thirds (65.1%) of them were living in rural areas, about one quarter of them were previously self-employed, near two thirds (62.8%) of them know someone near to them self-employed, and only 16.3% of them had attended training programs before this program about entrepreneurship.

**Table (2)** concludes that there were highly significant statistical differences ( $p \leq 0.001$ ) in total knowledge mean scores with elevation of knowledge mean score in posttest ( $8.70 \pm 1.77$ ) and follow up ( $8.01 \pm 0.99$ ) than pretest ( $2.99 \pm 3.06$ ).

**Table (3)** displays that there were highly significant statistical differences ( $p \leq 0.001$ ) in total entrepreneurial attitude mean scores with elevation of attitude mean score in posttest ( $117.38 \pm 9.13$ ) and follow up ( $115.0 \pm 13.1$ ) than pretest ( $103.27 \pm 29.77$ ).

**Figure (1)** illustrates that there were elevation of head nurses' mean scores of total entrepreneurial attitude at posttest ( $117.38 \pm 9.13$ ) and follow up ( $115.0 \pm 13.1$ ) than pretest ( $103.27 \pm 29.77$ ).

**Table (4)** concludes that there were highly significant statistical differences ( $p \leq 0.001$ ) in total entrepreneurial skills mean scores with elevation of skills mean score in posttest ( $85.42 \pm 11.19$ ) and follow up ( $79.43 \pm 13.78$ ) than pretest ( $42.92 \pm 22.22$ ).

**Figure (2)** illustrates that there were elevation of head nurses' mean scores of total entrepreneurial skills at posttest ( $85.42 \pm 11.19$ ) and follow up ( $79.43 \pm 13.78$ ) than pretest ( $42.92 \pm 22.22$ ).

**Table (5)** concludes that there were significant statistical positive correlations between head nurses' total entrepreneurial knowledge and attitude ( $r=0.33$ ,  $p=0.00$ ), entrepreneurial attitude and intention ( $r=0.65$ ,  $p=0.00$ ), entrepreneurial attitude and skills ( $r=0.021$ ,  $p=0.05$ ).

**Table (1): Frequency distribution of head nurses' personal data (n=86).**

Personal Data	No.	%
Age: 20-30 years	2	2.3
31-40 years	83	96.5
41-50 years	1	1.2

Mean± SD	25.20±3.67	
Gender: Male	6	7
Female	80	93
Marital status: Married	51	59.3
Single	35	40.7
Place of residence: Rural	56	65.1
Urban	30	34.9
Previous self-employment: Yes	21	24.4
No	65	75.6
knowing someone near to you self-employed before: yes	54	62.8
No	32	37.2
Attending training programs before this program about entrepreneurship: Yes	14	16.3
No	72	83.7

Table (2): Head nurses' total knowledge mean scores about entrepreneurship during pre, post and follow up educational program.(n=86).

Dimensions	Pretest		Posttest		Follow up		Repeated measures ANOVA	
	Mean	SD	Mean	SD	Mean	SD	F	p
Total knowledge	2.99	3.06	8.70	1.77	8.01	.99	224.13	.00

*P value is significant at ≤0.05, highly significant at ≤0.001.*

Table (3): Head nurses' total entrepreneurial attitude mean scores during pre, post and follow up educational program (n=86).

Dimensions	Pretest		Posttest		Follow up		Repeated measures ANOVA	
	Mean	SD	Mean	SD	Mean	SD	F	p

A-Need for achievement	21.66	7.34	26.51	2.65	25.23	1.78	33.24	.00
B- Need for Autonomy	21.15	6.63	24.16	3.20	24.11	2.31	14.39	.00
C- Creative Tendency	19.13	6.19	19.99	2.64	19.98	3.76	1.41	.00
D- Calculated Risk Taking	19.90	6.40	22.27	2.90	21.95	1.34	9.79	.00
E- Drive and Determination	21.43	6.17	24.45	1.95	24.08	3.90	18.75	.00
Total attitude	103.27	29.77	117.38	9.13	115.0	13.1	17.67	.00

P value is significant at  $\leq 0.05$ , highly significant at  $\leq 0.001$ .

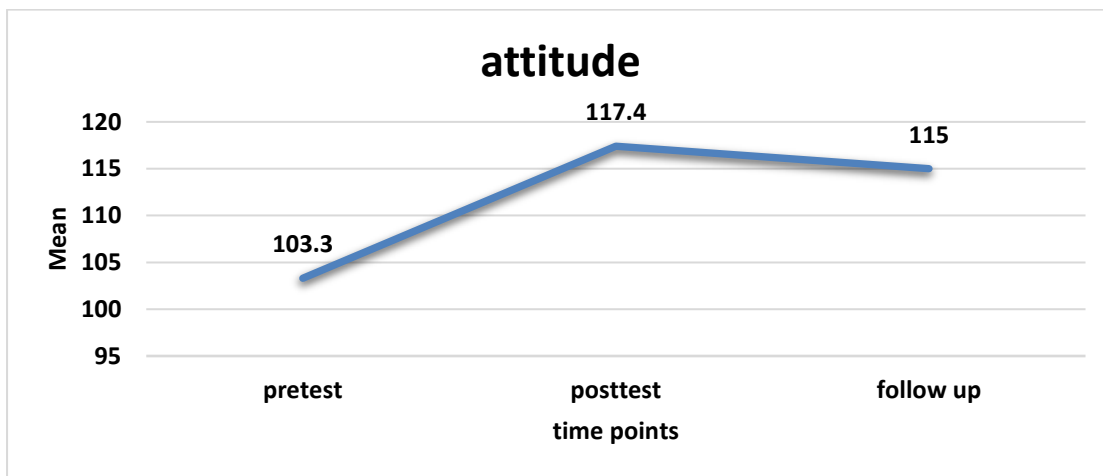


Figure (1): Head nurses' mean scores of total entrepreneurial attitude during pre, post and follow up educational program.

Table (4): Head nurses' total entrepreneurial skills mean scores during pre, post and follow up educational program.(n=86)

Dimensions							Repeated measures ANOVA	
	Pretest		Posttest		Follow up		F	p
	Mean	SD	Mean	SD	Mean	SD		
A-Strategic Factors	8.44	4.64	16.59	2.45	14.89	2.17	207.92	.00
B-Communication Factors	8.36	4.31	16.69	2.53	15.79	2.65	238.52	.00
C-Motivational Factors	8.34	4.29	16.57	2.67	14.69	3.26	228.49	.00
1-Total entrepreneurial leadership skills	25.14	13.13	49.85	7.16	45.37	8.08	234.76	.00
2-Opportunity Recognition	9.64	5.12	19.16	3.10	17.89	2.68	217.40	.00

3- Market awareness	8.14	4.27	16.41	2.98	16.17	3.02	216.95	.00
Total skills	42.92	22.22	85.42	11.19	79.43	13.78	251.01	.00

*P value is significant at  $\leq 0.05$ , highly significant at  $\leq 0.001$ .*

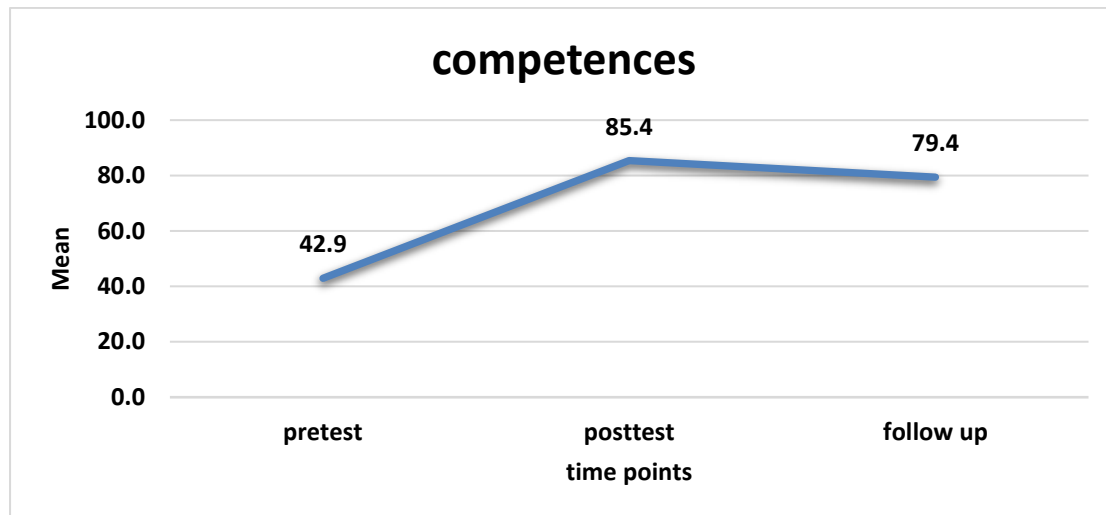


Figure (2): Head nurses' mean scores of total entrepreneurial competence during pre, post and follow up educational program.

Table (5): Correlation between head nurses' total entrepreneurial knowledge, intention, attitude and skills.

Pearson Correlation		Total knowledge	Total skills
Total Intention	r	-0.19	
	P	0.09	
Total skills	r	0.33	
	P	0.00	
Total attitude	r	-0.17	0.21
	P	0.11	0.05

*P value is significant at  $\leq 0.05$ , highly significant at  $\leq 0.001$ .*

### Discussion

The research aimed to examine the effect of entrepreneurship educational program on head nurses' entrepreneurial knowledge, attitude and competencies. The result showed that almost of head nurses fall in age group 30-40 years with mean age  $25.20 \pm 3.67$  years, the majority of them were



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females, and Approximately three fifths (59.3%) of head nurses were married, about two thirds (65.1%) of them were living in rural areas.

In congruence with these present study findings, (*Wardan et al., 2020*) mentioned that the highest percentage of the studied nurses ranging between 30 years to 40 years and the majority of them were married. Also, *Osabutey, (2018)* reported that most of their participants were females.

Conversely, *Ali et al. (2020)* that conducted a study about "Entrepreneurship orientation program and its effect on the entrepreneurial intention of future nurses" and stated that, more than three quarters of the study participants their ages varied from 22 to 30 years old and near to two quarters of the participants were single.

Currently, many researchers support the importance of including an entrepreneurship program/ education to encourage nurses to start their entrepreneurial activities. Actually, the current study findings revealed a statistically significant difference regarding entrepreneurial knowledge, attitude and competences between pre and post-program among studied head nurses and training program had a positive effect on improvement of entrepreneurial knowledge, attitude and competences of nurses.

From researcher point of view, this result might be due to the interest of head nurses with this new program. Moreover, the improvement is due to simple, clear and concise way of presentation lectures and the availability of relevant media that gave more illustration for understanding the text and frequent repetition and motivating them to share in the program.

This results was supported by (*Elali, & Al-Yacoub, 2016*) who conducted a study about effect of entrepreneurship training program on nursing interns' awareness and entrepreneurial intention and stated that, a significant improvement in nurses knowledge level after attending training program throughout immediately post and follow-up phases compared with the preprogram phase. In addition, the results are matching *Ismail, et al, (2015)* who explored that entrepreneurial exposure or education increases the level of entrepreneurial competence of a person.

Conversely, this finding disagreed with *Fellnhofer & Mueller, (2018)* who conducted a study titled " the nurse entrepreneur: empowerment needs, challenges, and self-care practices and stated that, there is insignificant improvement in nurses knowledge level after attending training program throughout immediately post and follow-up phases.

The current study revealed that head nurses had a high level of knowledge regarding entrepreneurship during the post and follow up educational program phases than preprogram phase. Additionally, there were highly significant statistical differences regarding entrepreneurial knowledge during pre, post & follow up educational program. These results might be due to the interest of head nurses with this new program content. Also, because this was an advanced and new idea which stimulated head nurses' motivation to learn about entrepreneurship and engaging in entrepreneurial activities.

In congruence with these present study findings, *Zinhom et al. (2020)*, who studied " Effect of Entrepreneurship Training Program on Nursing Interns' Awareness and Entrepreneurial Intention" and mentioned that there were a highly significant statistical differences in the participants knowledge between the different data collection phases and the knowledge was higher

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in posttest than pretest. On the other hand, *Layton et al., (2022)* in a study conducted with 102 nurses in the USA, reported that nurses lack knowledge about entrepreneurship, legal regulations and practices.

The concurrent study dedicated that all of studied head nurses had a high level regarding entrepreneurial attitude during the post and follow up educational program phases than preprogram phase. The present study findings were in agreement with *Wirajaya et al., (2021)* who mentioned that entrepreneurial attitude of nurses were two thirds of nurses showed an excellent entrepreneurial attitude while on third of nurses showed moderate level of entrepreneurial attitude. Also *Abd-elmonem et al., (2023)* in Egyptian study titled " Entrepreneurial Tendencies of New Graduate Baccalaureate Nurses and its Relation to their Professional Development and Career Aspiration " and concluded that that two thirds of newly graduate baccalaureate nurses had moderate to high level of entrepreneurial attitude.

On the other hand, the findings were incongruent with *Radwan & Khalil, (2023)* who showed that the nurse managers' had negative attitude toward entrepreneurship as this may be due to fear of social pressure to engage in entrepreneurship. On similarity, *Trotte et al., (2021)* who found that the general results of the study sample' entrepreneurial attitude were being low. Also *Woo et al., (2023)* entrepreneurship tendencies and nursing start-up attitudes in this study were slightly lower.

As regarding level of total entrepreneurial competencies among the studied head nurses, the study results clarified that head nurses had a high level entrepreneurial competencies during the post and follow up educational program phases than preprogram phase. These results might be due to head nurses may view entrepreneurship as aligned with nursing values of care, leading them to acquiring, sharing, and implementing knowledge and skill in their hospital leading to improve healthcare delivery and enhance patient outcomes and experiences.

The present study results were in agreement with *Sacre et al., (2024)* who showed that the healthcare professionals had overall moderate to high leadership and entrepreneurial competences. Also, this result is congruent with a study conducted in Nigeria by *(Pfeifer et al., 2019)* which found that entrepreneurial program, have positive influence on entrepreneurial competences. Furthermore, this result is congruent with a study conducted Pakistan by *(Phillips, et al., 2019)* which revealed that entrepreneurship education is having an impact on entrepreneurial 's skills.

Conversely, *Tarek et al. (2023)* revealed that, more than half of the studied nurses had an incompetent level of total entrepreneurial skills among the studied nurses. This finding was in agreement with *Dehghanzadeh et al. (2016)*, who conducted a study about Entrepreneurship psychological characteristics of nurses, who stated that, about three quarters of nurses had an incompetent level of total entrepreneurial skills. Also, *Radwan & Khalil, (2023)* showed that knowledge and skills related to entrepreneurship were perceived as significant barriers for nurses.

The concurrent study dedicated that all of studied head nurses had a high level regarding entrepreneurial leadership during the post and follow up educational program phases than preprogram phase. These results might be due to Leadership and entrepreneurship skills had an expected implication for patients' health. Indeed, effective health care entrepreneurial leadership is

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integral to quality care and can significantly improve patient outcomes and staff management through communication facilitation, coordination, and productivity.

On the same direction, *Jakobsen, (2021)* in his study titled "Entrepreneurship and nurse entrepreneurs lead the way to the development of nurses' role and professional identity in clinical practice". He found that the majority (86%) of nurse managers could be characterized as entrepreneurs. This was supported by *Sarnkhaowkhom et al., (2022)* who reviewed "Assessment of Entrepreneurial Leadership among Undergraduate Nursing Students: The Case from Thailand" This study's results revealed that most nursing students generally have entrepreneurial leadership at a high level.

On the other hand, *Awad et al. (2024)* mentioned that less than half of studied nurse managers had high total level of entrepreneurial leadership. This revealed that nurse managers believed that entrepreneurial leadership significantly contributes to their success. Also, *Haase & Franco, (2020)* revealed that leadership is highly relevant when it comes to promoting entrepreneurship and interpersonal communication act as mediators between transformational leadership and nurses' engagement in relation to entrepreneurial activities.

The concurrent study dedicated that all of studied head nurses had a high level regarding opportunity recognition during the post and follow up educational program phases than preprogram phase. These results might be due to the training program being able to improve head nurses ability to identify opportunities. This can serve as a driving force for professional and institutional development, encourage innovative actions, and help nurses effectively deal with environmental challenges.

In this regards, *Hassona, et al. (2023)* in Egyptian study titled with "The Influence of Entrepreneurial Leadership and University Support on Students' Entrepreneurial Intentions and Opportunity Recognition" confirmed that, entrepreneurship fully mediated the relationship between entrepreneurial leadership and nurses opportunity recognition. Also, *Awad et al. (2024)* showed that less than half of studied nurse managers had moderate level regarding opportunity identification and less than two fifths had high level.

The current study revealed that head nurses had a high level of marketing awareness during the post and follow up educational program phases than preprogram phase. From the researcher point of view training program can help head nurses to develop new ideas and modify nursing services to align with current market trends and capitalize on good market opportunities.

On the same line, *Omar et al. (2022)* in the study titled "Perception of MSU – Buug Nursing Students on the Importance of Entrepreneurship and Business Marketing" who reviewed that nursing students had a high awareness toward Business Marketing and value entrepreneurship.

In addition, the results of this study evident the strong positive correlations were founded between overall head nurses' entrepreneurial knowledge and attitude, and entrepreneurial attitude and competences after conducting entrepreneurial educational program. In agreement with these results *Radwan & Khalil, (2023)* who mentioned that there were a highly significant correlation between the knowledge and skills possessed by nurse managers and their attitudes towards entrepreneurship.

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On contrar'y *Karyaningsih, (2020)* conducted a study that revealed that entrepreneurship education has an impact on three variables: entrepreneurial attitude, knowledge, and intention. The study found that entrepreneurial knowledge has a significant influence on nurses' intention to become entrepreneurs, but it does not have a significant impact on their entrepreneurial attitude.

### Conclusion

It was concluded that, the educational program for head nurses was effective and improved their level of entrepreneurial knowledge, attitude and skill .

### Recommendations

**In the light of the main study findings, the following recommendations are proposed:**

1. Hospital administrators should support nurse leaders, empower them, and ensure the availability of needed resources to enhance their entrepreneurship abilities, in order to promote innovative and effective healthcare practices.
2. Encourage creative activities by providing incentives and focus on immediate reward for creative work and providing rewards for their achievement to motivate staff to continue.
3. Health authorities should shape the legal and administrative infrastructure of benefiting more from nurses as trained health man power in protecting and improving public health and pave the way for more nurses to become entrepreneurs.

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