

## **Developing and Implementing an Innovative Managerial Skills Training Program for Nurse Managers at Menoufia University Hospitals**

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**Abstract: Background:** Nowadays, innovativeness helps organizations in providing value with advanced strategies and services, solving client and organizational problems, and providing positive changes to the organization and society. **Purpose:** Develop and implement an innovative managerial skills training program for nurse managers at Menoufia University hospitals. **Design:** A quasi-experimental design was utilized at this study. **Setting:** At different departments in Menoufia University hospital at Shebin El-Kom. **Subjects:** All available nurse managers (70) were included at this study. **Instruments:** Three instruments used for data collection: Instrument I; Needs assessment questionnaire, Instrument II; Self-administered knowledge questionnaire, and Instrument III; Barriers and enablers of innovative managerial skills questionnaire. **Results:** Revealed that the most need assessment of innovative managerial skills of study group were learning & technology, motivation, and goal-orientation, while there was statistically significant difference between study and control group throughout study phases regarding the innovative managerial skills; motivation, understanding the external environment and crisis and risk management. Also, more than half of innovative managerial skills enablers were at the control group than study group, while the majority of innovative managerial skills barriers were at the study group than control group. **Conclusion:** There was improvement of nurse managers' innovative managerial knowledge and skills then diminish at follow up after three months of implementing training program. **Recommendation:** Hospital administrators should continuously assess nurse managers' needs for innovative managerial knowledge and skills to integrate these skills into hospital culture and create a more innovation-friendly environment.

**Key words:** Innovative managerial skills, Nurse managers, Training program.

### **Introduction**

Competitive environment, the importance of scientific knowledge, and health-care strategies has been changing rapidly, so innovation is considered the most important tool and the novelty of change based on an idea that generates the development of a new process or service, adopted by society, giving the organization a sustainable competitive advantage,

improving the quality of personal and organizational life and its sustainability.

Usually, the concept of innovation in the health sector and in particular for nursing includes new approaches, technologies and ways of working is described as a process of development. The planning of nursing practice, delivery and evaluation of the use of

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innovative strategies are among the key factors that directly affect the quality of the health care services (Khosravi, et al, 2019 and Pineda-Celaya, 2022).

Additionally, innovation is being considered by organizations as an important approach for effectiveness and competitiveness, so leadership and management should improve innovation by facilitating new thinking, new ideas and new fashion of working among the staff to enhance organizational performance. Healthcare professionals including nurses with positive attitude toward new ideas can contribute to improve and upgrade the capability of the existing health-care system or develop a new treatment strategy for patients (Asurakkody & Shin, 2018).

Nurses innovate on a daily basis as they find ways to deliver care despite broken systems around them. One of the ways we can refine nurse innovators is setting up formal methods for all nurses, no matter what level of the system they're in, to share ideas that could improve care. Organizations need to nurses who are risk takers while keeping patient safety paramount and who don't accept the status quo and are always questioning and seeing what's next and new (Weberg, 2018).

For nursing organizations, nursing innovation management is important as it leads to enhance the quality of nursing services, creating new knowledge, reducing unnecessary expenses and improving job performance (Mokekhaow, et al, 2017).

Additionally, the nursing management is a highly complex and changing structure, so the managerial development training programs provided to nurse managers based on scientific current data and continuous

education principles can increase nurse managers' knowledge levels and improve their innovative managerial skills can contribute to the improvement of nursing service management processes and the achievement of organizational goals (Goktepe, et al, 2018).

Nurse managers must generate innovative solutions to address problems in healthcare systems with a view to ultimately improving healthcare quality and patient outcomes. Innovation-based practice occurs at the junction of what is known on the basis of evidence and what is needed or desired (Ackerman, et al, 2018).

Moreover, nurse managers are constantly faced with the need to improve health care quality and safety while reducing costs. So, they need to innovative nurse managers create an infrastructure that integrates innovation into the processes of their organization in which staff nurses are both empowered and encouraged to develop innovative solutions to solve healthcare issues for systems to operate smoothly and to produce positive patient outcomes (Porter-O'Grady & Malloch, 2017 and Gallagher-Ford, et al, 2019).

Physicians, therapists, and nurses must involve in changing and modernizing standards and must apply novel techniques and procedures to ensure effective health-care services. Healthcare professionals' innovative work behavior may emerge in incremental adaptations of existing health-care processes, services or as entirely new practical solutions (Asurakkody & Shin, 2018).

Therefore, creating and fostering innovation have long been a main concern of different organizational leaders and healthcare professionals, regardless of the size, nature, or

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structure of the organization also, it has been a critical component of staff's effective job performance and their contributions to organizational success and the constant innovation capacity of healthcare organizations through generating new techniques and processes (Kang, et al, 2015 and Malik, et al, 2016). Fostering innovative managerial skills could improve medical service quality, increase job productivity, improve the effectiveness of treatment, reduce healthcare costs, satisfy the needs of patients, improve the effectiveness and access to healthcare services and simplify the process involved in delivering such services (Liu et al., 2020 and Gao, 2022).

As a key force in healthcare services, nurse managers and nurses must constantly improve innovative managerial skills to keep pace with the health industry and improve the quality of care through providing education and training on innovation processes, scheduling time for brainstorming among teams and solving problems together, providing resources, such as financial, information, personal, and emotional support, and actively enhance the talent pool to meet the current need for innovative nursing talent for the development of healthcare services (Croke, 2019, and Yan et al., 2020).

**Significance of the study:**

Innovative nurse managers are constantly faced with the fast-paced changes in healthcare, challenges and opportunities, and the needs to improve healthcare quality and safety while reducing costs. Thus innovative behavior is necessary for the evolution of nursing practice and organizational success. So, innovative nurse managers should support innovation, oversee change effectively, create an infrastructure that integrates innovation

into their organization in which staff nurses are both empowered and encouraged to develop innovative solutions to solve healthcare issues for systems to operate smoothly and to produce positive patient outcomes (Porter-O'Grady & Malloch, 2017 and Gallagher-Ford, et al, 2019).

From clinical observation, it was observed that nurse managers had defect in their managerial skills especially innovative skills. So the innovative managerial skills training programs that will be provided to nurse managers based on scientific current data and continuous education principles may increase nurse managers' knowledge levels and improve their innovative managerial skills which can contribute to the improvement of nursing service management processes and the achievement of organizational goal (Goktepe et al., 2018). Thus, the aim of present study was to develop and implement an innovative managerial skills training program for nurse managers at Menoufia University hospitals.

**Purpose of the study:**

To develop and implement an innovative managerial skills training program for nurse managers at Menoufia University hospitals.

**Research hypotheses:**

There will be an improvement of nurse managers' innovative managerial knowledge and skills after implementing a training program than before.

Nurse managers are not familiar with the enablers of innovative managerial skills.

There are many barriers to have and develop innovative managerial skills among nurse managers.

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**Methods:**

**Research design:**

A quasi-experimental research design was conducted to achieve the purpose of the study.

**Setting:**

The study was conducted at different departments and units at Menoufia University Hospitals at Shebin El-Kom. It was established in 1993, the bed capacity of it is 1000 beds. This hospital was divided into four buildings, three of these buildings are interlinked (General Hospital, Emergency Hospital, the Specialized Hospital), and one separate building namely Oncology Institution.

**Subject :**

The sample of the present study included all available nurse managers working in Menoufia University Hospitals at Shebin El-Kom at the pre-mentioned units and available at the data collection period. The available number was 70 nurse managers from the total number of 92 nurse managers [study group (35) and control group (35)].

**Tools of data collection:**

The data was collected by using three different instruments adapted and modified by the researcher after reviewing the related literature; was introduced to study subjects at pre-test, post-test and follow up test after conducting the innovative managerial skills program included:

**Instrument one:** Needs assessment questionnaire.

It was adapted from David (2006) and was modified by the researcher after reading literature review (Brett, et al; Leigh-Hunt, 2016 and Johnsson, 2016a). The aim of this instrument was to determine the innovative managerial skills needed from the nurse managers' point of view. It included:

▪ **Part one:** Personal information of the respondents as unit in the

hospital, age, educational levels, marital status, years of nursing experiences and attending training courses related to innovative managerial skills.

▪ **Part two:** Contained 130 items divided into 8 categories of innovative managerial skills: creativity and imagination (17 items), learning and technology (13 items), motivation (16 items), communication and emotional intelligence (28 items), leading groups and teams (14 items), understanding the external environment (8 items), goal-orientation (19 items) and crisis and risk management (15 items). This instrument was applied three times: at the beginning of the program, at the end of the program (post-test), and three months after implementation of the program. This instrument was applied three times: at the beginning of the program, at the end of the program (post-test), and three months after implementation of the program.

**Instrument two:** Self-administered knowledge questionnaire. It was developed by the researcher after reading literature review (Jasińska & Hab, 2019 and Adams, 2017). The aim of that instrument was to assess the nurse managers' knowledge level of innovative managerial skills. It contained 50 questions (18 mcq - 16 true & false- 16 matches) divided into 8 dimensions of innovative managerial skills: creativity and imagination (6 questions), learning and technology (6 questions), motivation (6 questions), communication and emotional intelligence (8 questions), leading groups and teams (6 questions), understanding the external environment (6 questions), goal-orientation (6 questions) and crisis and risk management (6 questions). This

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instrument was applied three times: at the beginning of the program, at the end of the program (post-test), and three months after implementation of the program.

Instrument three: Barriers and enablers of innovative managerial skills questionnaire. It was adapted from Evitt (2007) and was modified by the researcher. The aim of that instrument was to examine the barriers and enablers for implementing the innovative managerial skills from the nurse managers' point of view. It contained 36 items: included 17 items that indicated barriers facing the nurse managers in implementing innovative skills and 19 items that expressed the enablers that helped the nurse managers in implementing innovative skills.

#### **Validity of the instruments**

The instruments were distributed to a panel of experts consisted of two professors and three assistant professors in the field of nursing administration to judge the content and face validity of the instruments, presented from different faculties of nursing affiliated to Menoufia, Tanta and Cairo Universities. The period taken by the experts group lasted from the beginning of January month at 2020 to the end of February at 2020. The instruments were considered valid from the experts' views. Finally, modifications were done based on their comments such as (e.g. modify some words to give the right meaning).

#### **Reliability of the tools**

Cronbach's alpha for needs assessment questionnaire scale was 0.852, Cronbach's alpha for self-administered knowledge questionnaire scale was 0.925, and Cronbach's alpha for barriers and enablers' questionnaire scale was 0.947. In the light of these

values, it can be said that reliability of the three questionnaires was high.

#### **Ethical considerations**

The study was conducted with careful attention to ethical standards of research and rights of the participants. The respondent rights were protected by ensuring voluntary participation, so the informed consent was obtained by explaining purpose, nature time of conducting the study, potential benefits of the study, how data will be collected, any invasive procedure, expected outcomes and the respondent rights to withdrawing from the research study at any time in case of violation of his rights.

The respondent was assured that the data would be treated as strictly confidential; furthermore, the respondent anonymity would be maintained as they would not require mentioning their names; and the protocol of the study was revised and accepted by ethical committee in the faculty before starting the study. To ensure scientific honesty, the researcher used bracketing and intuiting to avoid bias.

#### **Pilot study**

Pilot study was conducted to assess instruments clarity and applicability of the questions and to detect the obstacles and problems that may encountered during data collection. It had also served in estimating the time needed for filling the instruments. The study was tested on 10 % of total subjects (7) nurse managers. Based on the results of pilot study, there was no necessary modification and clarification of some questions so this sample was included in the studied group of this study.

#### **Fieldwork (Data collection procedure):**

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In this phase the researcher review the available literature concerning the topic of the study national and international (books, articles, periodicals, and journals) and theoretic knowledge of the various aspects concerning the study topic to modify the study instruments of data collection.

The instruments were distributed to a panel of experts consisted of two professors and three assistant professors in the field of nursing administration to judge the content and face validity of the instruments, presented from different faculties of nursing affiliated to Menoufia, Tanta and Cairo Universities. The period taken by the experts group lasted from the beginning of January month at 2020 to the end of February at 2020. The instruments were considered valid from the experts' views. Finally, modifications were done based on their comments such as (e.g. modify some words to give the right meaning).

The preparation, construction and approval of data collection instruments consumed around two months from 22/6/2020 to 10/1/2021. The study was conducted through four phases:

**Phase I:** The study instruments were applied to assess nurse managers' knowledge, and fulfillment of structural standard.

Before distributing the instruments, clear instructions were given to every nurse manager in the control and study group. The questionnaire sheets were distributed and collected from nurse managers of control and study group at pre-test from the above mentioned study settings in the same day or next day, according to the type of work and workload of each department to determine the needed innovative managerial skills, knowledge of the innovative managerial skills, and the barriers and enablers for implementing

the innovative managerial skills from the nurse managers' point of view.

The data was collected in the middle of the shift and other time before the end of the shift and time needed to complete each instrument sheet was 15:20 minutes. It took from 22/6 to 20/7/2020.

**Phase II:** The intended intervention of the program was designed using the baseline information gathered in phase I. It was designed based on the needs assessment of nurse managers.

**Phase III:** The innovative managerial skills training program was implemented to the nurse managers of study group working at Menoufia University Hospitals at Shebin El-Kom based on the results of the pre-test. The three instruments links were send for nurse managers of study group on WhatsApp group then send PowerPoint program content and recorded explanation of it through 3 sessions, each session spend 2 hour per day from 1/8 to 25/8/2020.

After program implementation, a post-test was done immediately through three instruments links. There was continuous communication with nurse managers on WhatsApp group to provide frequent monitoring and adequate feedback to any inquiry.

**Phase IV:** After three months from program implementation from 5/12/2020 to 10/1/2021 with the rate of five days per week, all study instruments were applied for nurse managers of study group to evaluate the effect of the program on their innovative managerial skills and knowledge by comparing the results before and after program implementation and the results of the control group.

Before starting the program implementation, an official permission was obtained from the director of Menoufia University Hospital at

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Shebin El-Kom to carry out this study. This was done by sending letters clarifying the aim of the study from the faculty of nursing to hospital director. Then oral official permission had been obtained from the matron of the hospital and then from units nurse managers. The purpose of the study was explained to each nurse manager in the study and control group and getting their agreement to participate in the study.

**Statistical design:**

The collected data were organized, tabulated and statistically analyzed using SPSS software statistical computer package version 26. For quantitative data, the range, mean and standard deviation were calculated. For qualitative data, comparison was done using Chi-square test ( $\chi^2$ ). For comparison between means of variables for two groups, independent samples T-test were used. For comparison between means for variables pre and post intervention in a group, paired samples T-test was used. For comparison between means for variables during three periods of intervention in a group, or for more than two variables, the F-value of analysis of variance (ANOVA) was calculated.

**Analytic statistics as :**

Correlation between variables was evaluated using Pearson and Spearman's correlation coefficient r. A significance was adopted at  $P < 0.05$  for interpretation of results of tests of significance (\*). Also, a highly significance was adopted at  $P < 0.01$  for interpretation of results of tests of significance (\*\*) (Gerstman, 2008).

**Results**

**Table(1):** Illustrates percentage distribution of personal characteristics of the nurse managers. This table

showed that the highest percent (37.14%) of nurse managers of control group were at age range from 40 to 45 years while it ranges from 35 to 45 years (34.29%) at study group. Regarding academic qualification, all nurse managers had bachelor degree in nursing. According to experience years, the highest percent (54.29%) of the control group range from 15 to 20 years, while near half of study group (51.43%) had years of experience more than or 20 years. Furthermore, in relation to marital status; the majority of the control (94.29%) and study group (88.57%) nurse managers were married. In addition, regarding to work unit; the highest percent of the control (45.71%) and study (54.29%) nurse managers were working at departments. Finally, there was statistically significant difference between nurse managers' personal characteristics and their experience years and marital status.

**Table(2):** Clarifies percentage distribution of the nurse managers' need assessment for innovative managerial skills. This table illustrated that the most need assessment of innovative managerial skills were learning & technology (94.29%) and crisis & risk management (91.43%) for the control group, and the least need assessment of innovative managerial skills were understanding the external environment (48.57%) and goal-orientation (51.43%). While the most need assessment of innovative managerial skills were learning & technology (94.29%), motivation (97.14%), and goal-orientation (94.29%) for the study group, and the least need assessment of innovative managerial skills were creativity & imagination (82.86%) and leading groups & teams (80.00%).

**Table(3):** Illustrates percentage distribution of the nurse managers'

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innovative managerial skills and its dimensions. It showed that the nurse managers' innovative managerial skills were improved regarding all dimensions at post-test of study group (82.86%) than control group and pre-test of study group, then diminish at follow up (80.00%) after three months of program. In addition, there was statistically significant difference between study group' innovative managerial skills and leading groups & teams, understanding the external environment dimensions, also there was statistically significant difference between study group at pre-test and follow up ( $t=14.36$ ,  $p=0.021$ ) and control group ( $t=15.73$ ,  $p=0.007$ ) about total innovative managerial skills.

**Figure(1):** Shows percentage distribution of the nurse managers' satisfactory knowledge about the innovative managerial skills. It illustrated that there was improvement of nurse managers' satisfactory knowledge about the innovative managerial skills at post-test (88.6%) of study group, then diminish at follow up (54.3%) after three months of program.

**Table(4):** Shows percentage distribution of the nurse managers' satisfactory knowledge about the innovative managerial skills and its dimensions. It illustrated that there was improvement of nurse managers' satisfactory knowledge about the innovative managerial skills dimensions at post-test of study group, then diminish at follow up after three months of program; for example, nurse managers' satisfactory knowledge about creativity and imagination dimension at post-test of study group, then diminish at follow up (82.9%) after three months of program. In addition, there was statistically significant difference between study and control group about the knowledge

of following the innovative managerial skills; motivation, understanding the external environment and crisis and risk management dimensions.

**Table(5):** Clarifies percentage distribution of the nurse managers' satisfactory knowledge for innovative managerial skills. It presented that there was improvement of nurse managers' knowledge regarding the innovative managerial skills at post-test and follow up than pre-test and control group. In addition, the majority of nurse managers of study group at post-test (97.14%) and follow up (94.29%) had satisfactory knowledge of innovative managerial skills compared to pre-test and control group. Also, there was statistically significant difference between study and control group' knowledge and total innovative managerial skills.

**Table(6):** Clarifies percentage distribution of the nurse managers' enablers and barriers for implementing the innovative managerial skills. It presented that the level of barriers that face nurse managers' for implementing the innovative managerial skills was higher than enablers' level that support implementing the innovative managerial skills among nurse managers. In addition, more than half (54.29%) of innovative managerial skills enablers was at the control group than study group, while the majority (65.71%) of innovative managerial skills barriers was at the study group than control group. In addition, there was statistically significant difference between control group and study group about innovative managerial skills enablers.

**Table (7):** Ranking with percentage distribution of the nurse managers' organizational enablers for implementing the innovative managerial skills. It showed that the first ranking of the organizational

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enablers for innovative managerial skills among control group (71.43%) were about having sufficient resources to support innovations, training staff nurses to encourage innovativeness and cultural pride in hospital's innovative achievements items, while the last ranking of organizational enablers for innovative managerial skills (57.14%) were about protecting innovation from bureaucratic limitations, innovation introduced as complementary to previous items.

Furthermore, the first ranking of organizational enablers for innovative managerial skills among study group (60.00%) was about the organizational structure and cross functionality of divisions' item, while the last ranking of organizational enablers for innovative managerial skills (14.29%) was about having sufficient resources to support innovations item.

In addition, there was statistically significant difference between study and control group about the following organizational enablers for innovative managerial skills items; having sufficient resources to support innovations, having a champion management, protecting innovation from bureaucratic limitations, setting goals for innovative achievement, cultural pride in hospital's innovative achievements and innovation introduced as complementary to previous items.

**Table(8):** Illustrates ranking with percentage distribution of the nurse managers' individual enablers' for implementing the innovative managerial skills. It showed that the first ranking of individual enablers for innovative managerial skills at control group (82.86%) was about the free flow of information item, while the last

ranking of individual enablers for innovative managerial skills (60.00%) was about overarching team to drive innovative process item. Furthermore, the first ranking of individual enablers for innovative managerial skills at study group (77.14%) was about drawing on patients' experience item, while the last ranking of individual enablers for innovative managerial skills (14.29%) was about access to funds of innovative ideas not requiring approval item. In addition, there was statistically significant difference between study and control group about the following individual enablers for innovative managerial skills items; Access to funds of innovative ideas not requiring approval and accepting failure.

**Table(9):** Clarifies ranking with percentage distribution of the nurse managers' barriers for implementing the innovative managerial skills. It presented that the first ranking of barriers for innovative managerial skills at control group (88.57%) was about mis-allocation of finances item, while the last ranking of barriers for innovative managerial skills (48.57%) was about management tying up critical resource better allocated item. Also, the first ranking of barriers for innovative managerial skills at study group (94.29%) was about the internal politics item, while the last ranking of barriers for innovative managerial skills (40.00%) was about decision making by consensus item. In addition, there was statistically significant difference between study and control group about the following barriers for innovative managerial skills was fear innovation weakening existing outcomes item.

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**Table (1): Percentage Distribution of Personal Characteristics of the Nurse Managers  
(n=70).**

	Control group(n=35)		Study group (n=35)		$\chi^2$ P
	N	%	N	%	
<b>Age (in years)</b>					
▪ (35-<40)	9	25.71	12	<u>34.29</u>	1.135
▪ (40-<45)	13	<u>37.14</u>	12	<u>34.29</u>	0.769
▪ (45-<50)	9	25.71	9	25.71	
▪ ≥50	4	11.44	2	5.71	
<b>Range</b>	(36-53)		(35-51)		t=0.793
<b>Mean ± SD</b>	42.83±4.65		41.97±4.42		P=0.431
<b>Academic qualification</b>					
▪ Bachelor degree in nursing	35	100.0	35	100.0	-
<b>Experience years</b>					
▪ <10	2	5.71	0	0.00	
▪ (10-<15)	2	5.71	2	5.71	3.671
▪ (15-<20)	19	<u>54.29</u>	15	42.86	0.299
▪ ≥20	12	34.29	18	<u>51.43</u>	
<b>Range</b>	(9-25)		(13-26)		<b>t=2.366</b>
<b>Mean ± SD</b>	17.43±3.78		19.63±4.05		<b>P=0.021*</b>
<b>Marital status</b>					
▪ Married	33	<u>94.29</u>	31	<u>88.57</u>	
▪ Single	0	0.00	4	11.43	<b>6.063</b>
▪ Widow	2	5.71	0	0.00	<b>0.048*</b>
<b>Work unit</b>					
▪ Operating rooms (OR)	5	14.29	5	14.29	0.617
▪ Departments	16	<u>45.71</u>	19	<u>54.29</u>	0.734
▪ ICUs	14	40.00	11	31.42	

\* Significant at level P<0.05.

**Table (2): Percentage Distribution of the Nurse Managers' Need Assessment for Innovative  
Managerial Skills. (n=70).**

Innovative managerial skills	The nurse managers (n=70)				$\chi^2$ P
	Control group (n=35)		Study group (n=35)		
	N	%	N	%	
1. Creativity & imagination	21	60.00	29	<u>82.86</u>	
2. Learning & technology	33	<u>94.29</u>	33	<u>94.29</u>	
3. Motivation	20	57.14	34	<u>97.14</u>	
4. Communication & emotional intelligence	23	65.71	30	85.71	4.480
5. Leading groups & teams	28	80.00	28	<u>80.00</u>	0.063
6. Understanding the external environment	17	<u>48.57</u>	32	91.43	
7. Goal-orientation	18	<u>51.43</u>	33	<u>94.29</u>	
8. Crisis & risk management	32	<u>91.43</u>	30	85.71	

<60% Low                      (60-<75) % Moderate                      ≥75% High

\* Significant at level P<0.05.

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**Table (3): Percentage Distribution of the Nurse Managers' Innovative Managerial Skills and Its Dimensions (n=70).**

Dimensions of innovative managerial skills	Study phases (n=70)								$\chi^2$ P
	Control group (n=35)		Study group (n=35)						
			Pre		Post		Follow up		
	N	%	N	%	N	%	N	%	
1. Creativity & imagination	14	40.00	8	22.86	28	<b>80.00</b>	28	<b>80.00</b>	2.76 0.599
2. Learning & technology	19	54.29	22	62.86	29	<b>82.86</b>	28	<b>80.00</b>	8.42 0.077
3. Motivation	24	68.57	16	45.71	31	<b>88.57</b>	31	<b>88.57</b>	8.88 0.064
4. Communication & emotional intelligence	22	62.85	19	54.29	31	<b>88.57</b>	29	<b>82.86</b>	4.89 0.299
5. Leading groups & teams	28	80.00	6	17.14	34	<b>97.14</b>	31	<b>88.57</b>	17.64 0.001*
6. Understanding the external environment	16	45.71	15	42.86	25	<b>71.43</b>	20	<b>57.14</b>	18.85 0.001*
7. Goal-orientation	16	45.71	11	31.43	31	<b>88.57</b>	29	<b>82.86</b>	4.14 0.387
8. Crisis & risk management	13	37.14	9	25.71	26	<b>74.29</b>	24	<b>68.57</b>	2.58 0.629
Total innovative managerial skills	20	57.14	6	17.14	29	<b>82.86</b>	28	<b>80.00</b>	6.73 0.150
Control Vs Study t P			<b>15.73</b> <b>0.007*</b>				<b>14.36</b> <b>0.021*</b>		

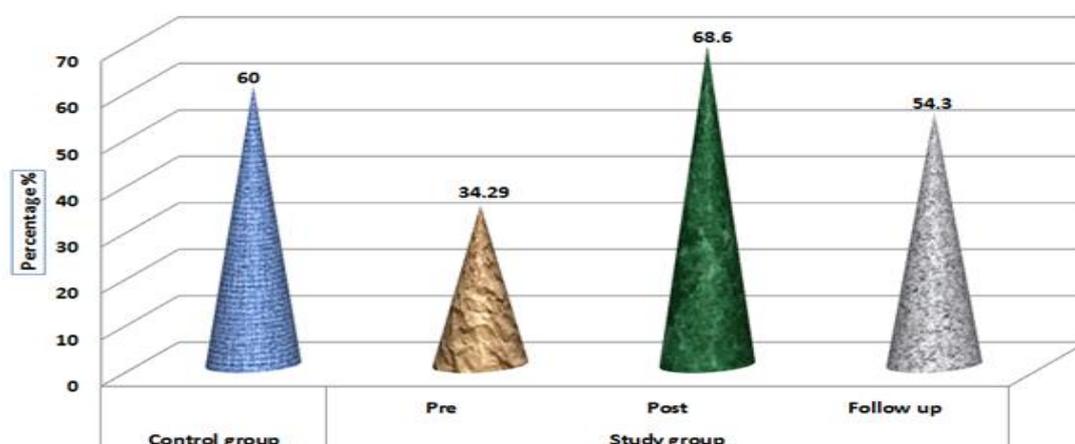
<60% Low

(60-<75) % Moderate

≥75% High

\* Significant at level P < 0.05.

**Figure (1): Percentage Distribution of the Nurse Managers' Satisfactory Knowledge about the Innovative Managerial Skills (n=70).**





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**Table (6): Percentage Distribution of the Nurse Managers' Enablers and Barriers for for Implementing the Innovative Managerial Skills (n=70).**

Enablers and barriers	Study phases at pre-test(n=70)				$\chi^2$ P
	Control group (n=35)		Study group (n=35)		
	N	%	N	%	
<b>1) Enablers</b>					
▪ Low	10	28.57	19	54.29	<b>15.640</b> <b>0.004*</b>
▪ Moderate	6	17.14	10	28.57	
▪ High	19	<b>54.29</b>	6	<b>17.14</b>	
<b>2) Barriers</b>					
▪ Low	12	34.29	6	17.14	2.701 0.609
▪ Moderate	2	5.71	6	17.14	
▪ High	21	<b>60.00</b>	23	<b>65.71</b>	

<60% Low

(60-<75) % Moderate

≥75% High

\* Significant at level P < 0.05.

**Table (7): Ranking with Percentage Distribution of the Nurse Managers' Organizational Enablers' for Implementing the Innovative Managerial Skills (n=70).**

Organizational enablers	Study phases at pre-test (n=70)						$\chi^2$ P
	Control group (n=35)		Ranking	Study group (n=35)		Ranking	
	N	%		N	%		
1. Having sufficient resources to support innovations.	25	71.43	<u>1</u>	5	14.29	<u>9</u>	10.96 0.004*
2. Rewarding successful innovation.	21	60.00	5	13	37.14	7	5.84 0.055
3. Having a champion management	21	60.00	5	8	22.86	8	25.32 0.000*
4. Training staff nurses to encourage innovativeness	25	71.43	<u>1</u>	20	57.14	2	5.56 0.062
5. Protecting innovation from bureaucratic limitations	20	57.14	<u>6</u>	20	57.14	2	6.84 0.033*
6. Setting goals for innovative achievement	24	68.57	2	17	48.57	5	6.67 0.036*
7. Encouraging long-term perspectives	22	62.86	4	18	51.43	4	5.84 0.054
8. Culture supportive of innovation vision	24	68.57	2	17	48.57	5	5.71 0.058
9. Cultural pride in hospital's innovative achievements	25	71.43	<u>1</u>	19	54.29	3	7.59 0.022*
10. Organizational structure and cross functionality of divisions	23	65.71	3	21	60.00	<u>1</u>	2.51 0.284
11. Innovation introduced as complementary to previous	20	57.14	<u>6</u>	16	45.71	6	11.12 0.004*

\* Significant at level P < 0.05.

**Table (8): Ranking with Percentage Distribution of the Nurse Managers' Individual Enablers for Implementing the Innovative Managerial Skills (n=70).**

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Individual enablers items	Study phases at pre-test (n=70)						$\chi^2$ P
	Control group (n=35)		Ranking	Study group (n=35)		Ranking	
	N	%		N	%		
1. Access to funds of innovative ideas not requiring approval	25	71.43	4	5	14.29	8	13.94 0.001*
2. Overarching team to drive innovative process	21	60.00	7	9	25.71	7	5.14 0.077
3. Drawing on patients' experience	27	77.14	3	27	77.14	1	1.67 0.434
4. Patients' interrelationship by backroom personnel	22	62.86	6	26	74.29	2	1.42 0.490
5. Free flow of information	29	82.86	1	21	60.00	3	3.04 0.218
6. Accepting failure	24	68.57	5	13	37.14	6	9.72 0.008*
7. Individual perspective of innovation	28	80.00	2	19	54.29	4	2.26 0.323
8. Participative or team style of management	28	80.00	2	18	51.43	5	5.41 0.067

\* Significant at level  $P < 0.05$ .

**Table (9): Ranking With Percentage Distribution of the Nurse Managers' Barriers for Implementing the Innovative Managerial Skills (n=70).**

Barriers items	Study phases at pre-test (n=70)						$\chi^2$ P
	Control group (n=35)		Ranking	Study group (n=35)		Ranking	
	N	%		N	%		
1. Competing management priorities	28	80.00	3	27	77.14	6	1.67 0.434
2. Mis-allocation of finances	31	88.57	1	32	91.43	2	2.94 0.230
3. Rewards and incentives	23	65.71	8	30	85.71	3	1.42 0.491
4. Encouraging status quo	26	74.29	5	29	82.86	4	2.63 0.267
5. Management tying up critical resource better allocated	17	48.57	13	15	42.86	11	2.13 0.344
6. Fear innovation weakening existing outcomes	21	60.00	10	19	54.29	10	11.06 0.004*
7. Management inability to implement innovation	22	62.86	9	25	71.43	7	3.21 0.200
8. Processes that do not support change	25	71.43	6	27	77.14	6	1.69 0.447
9. Innovation introducing contradictions	21	60.00	10	29	82.86	4	0.590 0.745
10. Decision making by consensus	19	54.29	12	14	40.00	12	2.13 0.344
11. Multiplicity of meeting to decide	20	57.14	11	22	62.86	9	0.33 0.846
12. Preoccupation with current activities and outcomes.	23	65.71	8	25	71.43	7	2.26 0.322
13. Short term focus and excessively internal focus	27	77.14	4	28	80.00	5	3.13 0.209
14. In appropriate strategic orientation	24	68.57	7	27	77.14	6	4.82 0.089
15. Internal politics	28	80.00	3	33	94.29	1	2.05 0.357
16. Organizational resistance to change and or cultural inertia	25	71.43	6	24	68.57	8	1.52 0.467
17. Lack of support to adopt change	29	82.86	2	28	80.00	5	0.12 0.940

## **Discussion**

In healthcare, innovation is necessary to achieve goals such as overcoming the challenges, controlling the costs, improving patient experiences and promoting community health. Innovation keeps an organization competitive and adaptive to change, involves risk as well as new ways of thinking. Nurse managers are looking for new ways to innovate and transform, being challenged to influence quality, design new care delivery models, must be role model use of creative approaches to problem-solving, generate innovative solutions to real practice problems, advance new ideas and promote a spirit of innovation among today's workforce (Snow, et al, 2019).

Thus, the current study aimed to develop and implement an innovative managerial skills training program for nurse managers at Menoufia University Hospitals in Shebin El-Kom, through the following hypotheses; there will be an improvement of nurse managers' innovative managerial knowledge and skills after implementing a training program than before at the study group than control group, nurse managers are not familiar with the enablers of innovative managerial skills, and there are many barriers to have and develop innovative managerial skills among nurse managers.

Before discussing the results related to test the study questions, light should be directed to personal characteristics of the studied subjects which illustrated that personal characteristic of control group was at age range from 40 to 45 years while it ranges from 35 to 45 years at study group. Regarding academic qualification, all nurse managers had bachelor degree in nursing. According to experience years, the highest percent of the control

group range from 15 to 20 years, while near half of study group had years of experience more than or 20 years. Furthermore, in relation to marital status; the majority of the control and study group nurse managers were married. In addition, regarding to work unit; the highest percent of the control and study nurse managers were working at departments.

The current study referred that the most need assessment of innovative managerial skills were learning & technology, motivation, and goal-orientation for the study group, and the least need assessment of innovative managerial skills were creativity & imagination and leading groups & teams. From the researcher point of view, this may be due to; current innovation changes and challenges that have evolved in learning strategies at nursing field, in which nurse managers need to receive a program to improve the awareness and effective skills regarding it; the current changing conditions also need for rapid adapt and response of capable, motivated and responsible nurse managers.

The result of the current study in the same line with, Ozdemir & Sonmez, (2021) who conducted the study that investigates "The relationship between nursing students' technology addiction levels and attitudes toward e-learning during the COVID-19 pandemic: A cross-sectional study" and showed that nursing study participants had a low level of technology and mildly positive attitudes toward e-learning, but that they also tended to want to avoid e-learning. In agreement with the current study results, Abbasi, et al, (2020) who conducted the study that investigates "Perceptions of students regarding E-learning during Covid-19 at a private medical college" and reported that more than half of nursing study

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personnel had negative perceptions and attitudes toward e-learning during the COVID-19 pandemic.

On the opposite side, Shak & Mansor, (2020) who conducted the study that investigates "The Relationship between Knowledge Management and Organizational Learning with Academic Staff Readiness for Education" and founded that the level of organizational learning practiced by the studied staff was high. Conversely, this result was disagreed with, Chakkaravarthya, et al, (2020) who conducted the study that investigates "Determinants of readiness towards self-directed learning among nurses and midwives: Results from national survey" and reported that there was a high level of readiness towards self-directed learning among the study participants.

Moreover, contradictory to the current study results, Francis-Coad, et al, (2019) who conducted the study that investigates "Evaluation of care staff knowledge, confidence, motivation and opportunity for preventing falls in residential aged care settings: A cross-sectional survey" and reported that care staff had high levels of confidence and motivation at work. Also, this result was inconsistent with Goncharuk, (2018) who conducted the study that investigates "Exploring a motivation of medical staff" and concluded that Ukrainian medical staffs (doctors and nurses) were less motivated by the altruistic motivator.

In addition, contradictory to the current study results, Sanusi, et al, (2018) who conducted the study that investigates "Effects of goal orientation, self-efficacy and task complexity on the audit judgment performance of Malaysian auditors" and concluded that the participants generally had a high level of learning goal orientation. Furthermore, this result matched with

Liu, (2020) who conducted the study that investigates "Inter-professional nursing education and the roles of swift trust, interaction behaviors, and creativity: A cross-sectional questionnaire survey" and revealed that the mean score for team creativity was high among study participants.

Also, the results of the current study was contradicted with Obiwulu, et al, (2019) who conducted the study that investigates "Sustaining innovation: Creativity among employees of small and medium-sized enterprises (SMEs) and students in higher education institutions in Brunei Darussalam" and founded that a majority in both groups had not received prior instruction in creativity and that employees of SMEs had less interest in receiving creative instructions.

In agreement with the current study results, Alabdulbaqi, et al (2019) who conducted the study that investigates "The relationship between self-leadership and emotional intelligence among staff nurses" and founded that majority of the participants had high self-leadership. Furthermore, the result of the current study in the same line with Baek, et al, (2019) who conducted the study that investigates "Authentic leadership, job satisfaction and organizational commitment: The moderating effect of nurse tenure" and reported that nurses who rated their unit managers had higher authentic leadership at the work.

On the same line with the current study results, Shanafelt, et al, (2021) who conducted the study that investigates "Assessment of the association of leadership behaviors of supervising physicians with personal-organizational values alignment among staff physicians" and concluded that leadership behavior scores among the studied managers and leaders were high. This result not matched with

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Boamah, (2018) who conducted the study that investigates "Linking nurses' clinical leadership to patient care quality: The Role of transformational leadership and workplace empowerment" and reported that managers had a moderate degree of transformational leadership.

The current study referred that there was improvement of nurse managers' innovative managerial knowledge and skills at post-test of study group than pre-test and control group (satisfactory level), then diminish at follow up after three months of program. From the researcher point of view, this may be due to; nurse managers of study group have knowledge deficit at pre-test, that might be due to novelty of the concept and it is essential to be practiced at the organization and not exposure of nurse managers to the program content and activities.

In agreement with the current study results Cordón-Pozo, et al, (2017) who conducted a study that investigates "Innovation training and product innovation performance: the moderating role of external cooperation" and founded that the positive impact of innovation training program on the innovation knowledge and performance among study participants within the organization. At the same time, Mohammadi, et al, (2018) who conducted the study that investigates "The Relationship between antecedents and processes of unlearning and organizational innovation among Hamedan teaching hospitals" and concluded that there was significant association between the training courses in the field of the duties and occupational responsibilities of the health personnel and the provision of new and innovative ideas that in turn strengthening innovation in the organizational centers.

Moreover, this result was consistent with Medina, et al, (2019) who conducted the study that investigates "Impact on the students learning of a teaching Innovation program at the University of Barcelona" and founded that the innovation program actions had a positive influence on the study participants' learning processes comparing to before the program.

Also, the result of the current study agreed with Gunawan, et al, (2020) who conducted the study that investigates "Perceived managerial competence of first-line nurse managers: a comparative analysis among public hospitals" and reported that the mean scores of innovative work behavior, total knowledge and total skills among study participants were decreased slightly three months post program compared to immediately post program but still higher than preprogram period.

Furthermore, the result of the current study in the same line with Baker & El-saidy, (2020) who conducted the study that investigates "Development of nurse manager innovative behavior and its effect on the quality of care for elderly patients" and founded that the mean score for all components of innovation skills and behavior (opportunity exploration, idea generation, idea championing and idea implementation) were higher in posttest of the training program than pretest among study participants at the work.

The current study results were supported by Groyecka, et al, (2020) who conducted the study that investigates "On the benefits of thinking creatively: Why does creativity training strengthen intercultural sensitivity among children" and concluded that there was increase in creative abilities among study personnel after the program that

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might make participants more open to others within the organization. Moreover, this result was consistent with Ling & Loh, (2021) who conducted the study that investigates "Relationships between cognitive pattern recognition and specific mathematical domains in mathematics education" and concluded that critical thinking was a good predictor for creativity among study participants in which more training on critical thinking help students to improve recognition pattern ability and creativity and innovative skills

Conversely, this result was disagreed with Shubina & Kulakli, (2019) who conducted the study that investigates "Critical thinking, creativity and gender differences for knowledge generation in education" and founded that there was a significant negative correlation between critical thinking and creativity among study participants as the analytic problem solving methods used with critical thinking ensures for better creative approaches that essential to gain innovative ideas and results.

Also, this finding was in agreement with Mivehchi, et al, (2020) who conducted the study that investigates "A framework for evaluating the impact of mobile games, technological innovation and collaborative learning on students" motivation" and revealed that there was significant and positive relation between collaborative learning and the technological innovation among study participants such as smart systems, Internet of thing, cloud services and new models of learning and student development that in turn was viewed as an important factor for students" motivation.

Additionally, this result go in line with Zhang, et al, (2021) who conducted the study that investigates "The impact of empowerment focused human resource

management on relationship learning and innovation" and reported that information sharing and knowledge integration is positively associated with product innovation skills and abilities among study participants.

The result of the current study in the same line with Magen-Nagar & Shonfeld, (2020) who conducted the study that investigates "The impact of an online collaborative program on intrinsic motivation, satisfaction and attitudes towards technology" and reported that online collaborative program improved the study participants' intrinsic motivation through increasing the satisfaction level and attitudes towards technology in education.

Furthermore, the result of the current study in the same line with Gómez Carrasco, et al, (2021) who conducted the study that investigates "Effects of a teacher training program on the motivation and satisfaction of history secondary students" and revealed that after the application of the training program, there was a significant improvement in motivation and satisfaction among study participants.

In addition, this result matched with Cuevas-Vargas, et al, (2021) who conducted the study that investigates "The relation between adoption of information and communication technologies and marketing innovation as a key strategy to improve business performance" and reported that each of the dimensions and the extent of information and communication technologies had a positive effect on each element of the organization's innovation performance as well as organizational personnel capacity to innovate.

Furthermore, these results came in harmony with Abdullah, et al, (2021) who conducted the study that investigates "The relationship between

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emotional intelligence and innovative work behavior" and founded that high emotional intelligence leadership was an important factor for stimulating organizational personnel innovative behavior and skills through focuses on cultivating good relationships within the organization.

Also the result of the current study agreed with Ali, et al, (2020) who conducted the study that investigates "Impact of humble leadership on project success: The mediating role of psychological empowerment and innovative work behavior" and clarified that leadership had the significant potential to improve innovative skills among organizational participants through motivating the knowledge and ideas sharing practices. Furthermore, the current study results were supported by Ahmad, et al, (2021) who conducted the study that investigates "The inter-relation of corporate social responsibility at employee level, servant leadership, and innovative work behavior in the time of crisis from the healthcare sector of Pakistan" and concluded that servant leadership was positively related to innovative behavior and skills among study participants.

Furthermore, this result matched with Doloreux, et al, (2019) who conducted the study that investigates "Innovation type and external knowledge search strategies in KIBS: evidence from Canada" and concluded that there was a direct and positive relationship between innovation skills and type and openness to external knowledge sourcing or external partnering strategies among the study participants. Furthermore, the result of the current study in the same line with Iqbal & Hameed, (2020) who conducted the study that investigates "Open innovation challenges and coope-tition-based open-innovation empirical

evidence from Malaysia" and founded that encouraging internal collaboration significantly enhances organizations' innovation skills among study participants.

Furthermore, the current study results were supported by Pino Yancovic, et al, (2020) who conducted the study that investigates " School improvement networks and collaborative inquiry: Fostering systemic change in challenging contexts" and revealed that networks significantly improve innovation skills and strategies through an efficient use of human and physical resources, improve change and the generation of professional capital within the organization.

Moreover, this result was consistent with HYUN & RHEE, (2021) who conducted the study that investigates "Network perspectives in innovation research: looking back and moving forward" and founded that there was significantly relation between team-level innovation processes and the internally cohesive network connected by diverse sets of outside network within the organizational personnel.

Conversely, this result was disagreed with Shunmugam, (2020) who conducted the study that investigates "Ingraining goal orientation behavior among Malaysian adolescents using Solution-focused group work (SFGW)" and founded that there was no difference of goal orientation behavior means score at pre-test, post-test and follow-up test among study participants.

This result was consistent with Mirzaei, et al, (2019) who conducted the study that investigates "The effect of disaster management training program on knowledge, attitude, and practice of hospital staffs in natural disasters" and revealed that the educational program improved the nurses' preparedness containing their

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knowledge, attitude, and practice in responding to crisis and disasters.

Furthermore, the result of the current study in the same line with Crandall, et al, (2020) who conducted the study that investigates "Crisis management: Leading in the new strategy landscape" and revealed that proactive and innovative organizations continually improve the crisis readiness capabilities through crisis management a part of the strategic management process.

On the same line with the current study results, Tohänean, et al, (2020) who conducted the study that investigates "Business model innovation through the use of digital technologies: Managing risks and creating" and reported that proactive risk management significantly associated with innovation strategies among study participants within the organization in which risks were inevitable during the innovation process and were identified in the early stages of organizational innovation, so there is sufficient time for them to be avoided.

Regarding the nurse managers' enablers and barriers for innovative managerial skills, the results of the current study revealed that the level of barriers that face nurse managers' for implementing the innovative managerial skills was higher than enablers' level that support implementing the innovative managerial skills among nurse managers.

Also, Regarding the nurse managers' enablers for innovative managerial skills, the nurse managers are not familiar with the enablers of innovative managerial skills, the results of the current study reported that the nurse managers' enablers (organizational and individual) for the innovative managerial skills were higher at the control group than study group, and

there was statistically significant difference between study and control group about the following enablers for innovative managerial skills items; having sufficient resources to support innovations, having a champion management, protecting innovation from bureaucratic limitations, setting goals for innovative achievement, cultural pride in hospital's innovative achievements and innovation introduced as complementary to previous, and access to funds of innovative ideas not requiring approval and accepting failure items.

From the researcher point of view, this may be due to that the nurse managers become familiar with the enablers of innovation within the organization such as the resources that enable nurse managers to adopt open models for innovation and engage with external knowledge sources to attract new groups of qualified personnel as well as financial resources essential to advance technological knowledge, and implement creative and profitable innovation within the organization. Also, nurse managers are aware of bureaucracies help to work more effectively with the staff and develop and implement new innovative ideas at the top. Furthermore, the training program improves a strong innovative culture and the ability to accept failure among nurse managers that help organization to increase the innovation investment within the organization.

These results came in harmony with Gupta & Barua, (2018) who conducted the study that investigates "Modeling cause and effect relationship among enablers of innovation in SMEs" and revealed that enablers including entrepreneur traits, knowledge management, resources for innovation, and linkage capabilities were significantly prominent enablers for successful innovation among study

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participants in SMEs. Additionally, these results go in line with, Sergeeva & Zanello, (2018) who conducted the study that investigates "Championing and promoting innovation in UK megaprojects" and concluded that innovation champions proactively and enthusiastically encourage innovative ideas, and enhance innovation narratives among study participants at the work.

Moreover, this result was consistent with Ruggiero & Cupertino, (2018) who conducted the study that investigates "CSR strategic approach, financial resources and corporate social performance: the mediating effect of innovation" and revealed that corporate financial performance (CFP) and resources had a positive impact on corporate innovation skills and activities among study participants within the organization.

Furthermore, these results came in harmony with Damanpour, et al, (2018) who conducted the study that investigates "Internal and external sources and the adoption of innovations in organizations" and founded that centralization in support of innovation policy not significantly enhance innovation widely throughout the bureaucratic system in which the hierarchical structures and the absence of effective horizontal coordination between departments continues to be a major obstacle to innovation. Also the result of the current study agreed with Smith, et al, (2020) who conducted the study that investigates "When Failure is the only option: How communicative framing resources organizational innovation" and founded that innovation failure significantly occurred through communicative framing that plays a central role in constituting innovation skills and practices and enhancing change within the organizations.

In agreement with the current study results, De Azevedo, et al, (2021) who conducted the study that investigates "Building organizational innovation through HRM, employee voice and engagement" and reported that the resources available for innovation (RI) within the organization had a positive influence on organizational innovation (OI) among study participants in which organizational human resource policies should aim to create, develop and maintain action that recognizes and supports innovation within the organization.

In addition, this result congruent with Drechsler, et al, (2021) who conducted the study that investigates "Innovation champions' activities and influences in organizations: A literature review" an revealed that the innovation champion context was significantly and positively related to improving and supporting the advantages of new ideas or innovations as innovation champions maintain access to resources.

Conversely, this result was disagreed with Sareen & Pandey, (2021) who conducted the study that investigates "Organizational innovation in knowledge intensive business services: The role of networks, culture and resources for innovation" and concluded that resources for innovation (RI) not had a significant effect on organizational innovation skills and strategies at the work.

Regarding the nurse managers' barriers for innovative managerial skills, there are many barriers to have and develop innovative managerial skills among nurse managers, the results of the current study revealed that the innovative managerial skills barriers were higher at the study group than control group, and there was statistically significant difference between study and control group about

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the following barrier for innovative managerial skills was fear innovation weakening existing outcomes item. From the researcher point of view, fear of innovation one of the main barriers among nurse managers might be due to diffusing ideas and the lack of information and skills for suitable planning. That had a considerable negative effect on innovation within the organization

These results go in line with LESÁKOVÁ, et al, (2017) who conducted the study that investigates "Innovation leaders, modest innovators and non-innovative SMEs in Slovakia: Key factors and barriers of innovation activity" and concluded that innovation managers and leaders indicated that bureaucracy and corruption, high cost of innovations, and inappropriate state support of innovation activities were significant barriers to innovative skills and activities among personnel within the organization. Furthermore, the result of the current study agreed with Birgit, et al, (2018) who conducted the study that investigates "Needs, drivers and barriers of innovation: The case of an alpine community-model destination" and reported that knowledge and coaching gaps, missing engagement of employees and cooperation impede innovation skills and activities among personnel within the organization.

Also, this finding was in agreement with Chuang, et al, (2018) who conducted the study that investigates "A qualitative study of barriers to innovation in academic libraries in Taiwan" and founded that barriers to innovation significantly associated with the tensions, conflicts and dilemmas faced throughout the implementation of innovations within the organization including innovation failures organizational barriers, leadership- and resource-related

barriers, network- and system-related barriers, and culture-related barriers that stem from resistance to innovation, fear of change or failure, conservative decision making and restrictive organizational culture.

Moreover, this result was consistent with, López Ramos, et al, (2018) who conducted the study that investigates "Management, innovation capacity and fear of failure in a sample of Spanish firms" and concluded that there was a positive association between fear of failure (FF) and innovation capacity (IC) blocking behaviors in which fear of failure behaviors generate pressure, discomfort, demotivation, frustration or stress, decrease the organization efficiency, facilitating the occurrence of errors and reducing the quality of an appropriate environment for innovation.

Furthermore, the result of the current study in the same line with Hameduddin, et al, (2020) who conducted the study that investigates "Conditions for open innovation in public organizations" and reported that managers and policy makers that granting power to organizational personnel was a crucial practice that can decrease perceived barriers to innovation skills and strategies within the organization in which providing information was positively associated with perceived barriers to innovation, while offering rewards and access to knowledge and skills were negatively associated with perceived barriers to innovation.

In agreement with the current study results, Cinar, et al, (2021) who conducted the study that investigates "An international exploration of barriers and tactics in the public sector innovation process" and stated that there was significant relation between increased personnel power from the organization and decreasing perceived barriers to

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innovation among study participants at work.

On the opposite side, Ouslis, et al, (2020) who conducted the study that investigates "How team innovation beliefs and performance relate to fear of failure: A Fear of failure fallacy?" and concluded that fear of failure had no significant relationship with team ratings of innovation skills quality among study participants at the work. Also, this result disagreed with Hartono & Kusumawardhani, (2019) who conducted the study that investigates "Innovation barriers and their impact on innovation: Evidence from Indonesian manufacturing firms" and revealed that finance, risk, knowledge and cooperation barriers had negative influence on innovation skills, activities and innovation performance among organizational personnel at the work.

**Conclusion**

In the light of the current study results, it was concluded that: there was improvement of nurse managers' innovative managerial knowledge and skills and its dimensions at post-test of study group compared to pre-test, and then diminished at follow up after three months of implementing the training program.

Additionally, regarding the nurse managers' enablers and barriers for innovative managerial skills, the level of nurse managers' barriers that face for implementing the innovative managerial skills was higher than enablers' level that support implementing the innovative managerial skills among nurse managers. Also, the enablers (organizational and individual) for the innovative managerial skills were higher at the control group than study group, while regarding the barriers to hold and develop innovative managerial skills, the majority of

innovative managerial skills barriers were at the study group than control group.

**Recommendation**

Based on the findings of the present study, the following recommendations are proposed:

Nurse managers should seek to improve the learning and technology, goal-orientation and give reward and motivate nurse managers by incentives that essential to improve innovative managerial knowledge and skills.

Organizations should facilitate innovative managerial skills among nurse managers through support structures and internal politics to identify and develop innovations early and enhance organizational growth and improvement.

Hospital administration should continuously assess nurse managers' needs for innovative managerial knowledge and skills to integrate these skills into hospital culture and create a more innovation-friendly environment. The novel concept of innovative managerial skills should be presented as an academic subject in the curriculum for technical institute and nursing faculties' nursing students and evaluated annually for renewal and modification.

Study the effects of training program for nurse managers about innovative managerial skills on the organizational productivity and quality of care.

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