Impact of Competency-Based Intervention on Leadership Effectiveness of Head Nurses in Teaching Hospitals

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Abstract

Background: Head nurses have a crucial leadership role in managing their units and providing high-quality and safe nursing care. Head nurse leadership competency and effectiveness are very essential to manage nursing care practices and management activities in their hospitals. Development leadership competency intervention programs would improve the head nurse competency and effectiveness. **This study** aimed to evaluate the impact of the leadership competency intervention program on the leadership effectiveness of head nurses. **Subjects and Method: Study design:** A quasi-experimental design. **Setting**: The study was conducted in inpatient care units (general wards and toxicology, intensive and critical care units) at Alexandria University hospitals. **Subjects:** The study was carried out on 90 head nurses who participated in the intervention program. **Tools of data collection**: Self-assessment questionnaires of leadership competency and leadership effectiveness were used to collect data in this study. **Results:** The results indicated an enhancement in head nurses' leadership competency and effectiveness levels post and follow-up intervention program. Overall head nurse leadership competency and effectiveness revealed significant differences throughout the post (Z= -6.051 and   -5.962 respectively) and follow-up intervention (Z= -6.047 and -5.877 respectively) compared to pre-intervention program. The post and follow-up significant correlation (r=.90 and. 94, respectively) and regression results (B=.61, R^2 =. 81; B=.62, R^2 =. 88) confirmed that the leadership competency intervention program was effective in increasing and enhancing the leadership effectiveness levels among head nurses. **Conclusion:** A leadership competency intervention program for head nurses enhanced their levels of leadership competency and effectiveness. **Recommendations:** Leadership competency intervention programs should be created in healthcare settings to prepare head nurses for leadership competencies, to achieve their management role effectively and support them to become effective nurse leaders. The necessary resources should be provided for establishing such programs.

Keywords: leadership, competency, effectiveness, intervention, program, head nurses

Introduction

Head nurses and the first-line nurse manager's terms are interchangeable and are essential to any healthcare organization. They play an important role in holding 24-hour accountability for all patient care activities in their unit and managing their unit within a health care organization **(Göktepe et al., 20018; Paarima et al., 2020; Ahmed & Abd-El Ghani, 2021)**. They lead multifaceted complex and vital management and leadership roles. Head nurses' primary roles are to ensure the delivery of quality and safe care and serve as the bridge between the top managers and nurses. They are also in charge of planning, organizing, controlling and maintaining healthy and safe working environment, thus providing a positive impact on both nursing staff and patient outcomes, reducing adverse events in health care organizations **(Alomairi et al. , 2018; Ofei et al., 2020 ; Paarima et al., 2022).**

Head nurses should have fundamental core competencies ensure the effectiveness of their management work, as competent head nurses have a crucial role in guiding the actions and behaviors of their nursing staff. They develop strategies to manage different work-related problems, looking for effective solutions and supporting their staff physically and emotionally **(Paarima et al., 2020; Munro & Hope, 2020).** Leadership competency is an important tool that head nurses can use to initiate changes in nursing practice to enhance the attitudes of their subordinates **(Chase, 2010; Elhadad et al., 2022).**

Head nurses' leadership competencies are the knowledge and ability of head nurses to direct the operations of an organization using skills, behaviors and attitudes to perform activities within

the defined scope of practice at an acceptable level of proficiency and also to organize the support of individuals or groups in the achievement of a shared goal (**American Nursing Association, 2018; García et al., 2020**). **Chase (2010)** reported that head nurses require fourteen leadership competencies to be successful managers in their management position. These leadership competencies are decision-making, power and empowerment, delegation, change process, conflict resolution, problem-solving, stress management, research process, motivational strategies, workflow process, policy and procedure, staff education, time management, and interdisciplinary care coordination.

Any head nurse proficient in knowledge and ability to apply these leadership competencies enhances the chance of being an effective nurse leader in health care organizations (**Mahdi et al., 2022; Wang et al., 2022**). Leadership core competencies also have implications on head nurses' leadership effectiveness (**García et al., 2021; Paarima et al., 2022**). Leadership effectiveness can be defined as the ability to obtain the resources necessary to accomplish established goals of the institution by encouraging the cooperation of others (**Personality, 199; Wood, 20024**). Head nurses' leadership effectiveness has the key dimensions of envisioning, energizing, designing and aligning, rewarding and feedback, team building, and empowering for achieving organizational goals (**Guillén & Florent-Treacy, 2011**).

Significance of the study

Head nurse leadership competency and effectiveness are essential for striving and achieving safe and high-quality nursing care in healthcare settings. Nurses who wish to develop or promote their professional careers as nurse managers should first develop the leadership core competencies by following educational programs (**García et al., 2021; Paarima et al., 2022**). Developing leadership competency intervention programs will improve the head nurses' ability to acquire the necessary skills, knowledge, and attitudes towards their leadership role, enabling them to lead their staff and manage their units effectively (**García et al., 2021; Paarima et al.,**

2022).

Worldwide, there are few studies regarding developing managerial and leadership competencies through implementing a training program (**Nghe, 2020; Ofei et al., 2020; Aqtash, et al., 2022**). To our knowledge in Egypt and Arabic countries, studies in different countries, including Egypt were mainly concerned with first-line nurse managers' core competencies and their relation to service quality and work engagement, but there is a crucial need for developing leadership competency among head nurses through intervention program and assessing its relation to leadership effectiveness of head nurses (**Ahmed & Abd-El Ghani, 2021; Ahmd et al., 2021; Elhanafy & El Hessewi,2021; Aljabali 2022**). Therefore, this study took necessary actions to fill this gap by evaluating the impact of a leadership competency intervention program on the leadership effectiveness of head nurses.

Aim of the study:

This study aimed to evaluate the impact of a leadership competency intervention program on the leadership effectiveness of head nurses

Research questions :

This study contained three main research questions as follows:

(1) Does implementing the leadership competency intervention program affect the head nurses' knowledge of competency?

(2) Does implementing the leadership competency intervention program affect the ability of head nurses to use competency in their workplace?

(3) Does implementing the leadership competency intervention program affect head nurse leadership effectiveness?

Subjects and Method:

Research design:

A quasi-experimental design with pretest-posttest was implemented on one group of head nurses to evaluate the effectiveness of the leadership competency intervention program on the leadership effectiveness of head nurses.

Settings:

Inpatient care units at Alexandria University hospitals. Alexandria University hospitals are teaching hospitals that are affiliated with Alexandria University. Alexandria University hospitals are located in the Faculty of Medicine comprising inpatient care units (general wards, toxicology, and intensive and critical care units) and outpatient care units.

Subjects:

A convenience sampling of 90 head nurses who gave informed consent to complete the educational training program under study.

Study tools:

The tools were developed based on the literature review (**Chase, 2010; Guillén and Florent-Treacy, 2011**) and composed of two parts:

*Part (I): Leadership competency scale*s: 14 leadership competencies were utilized in this study, according to **Chase (2010).** The questionnaires contained two main formats concerning knowledge of competency and the ability to use competency. There were 14 leadership competency aspects in each format comprising 28 aspects into two formats of leadership competency. These aspects were decision-making, power and empowerment, delegation, change process, conflict resolution, problem-solving, stress management, research process, motivational strategies, workflow process, policy and procedure, staff education, time management, and interdisciplinary care coordination.

The researchers modified the ranking Likert scale to fulfill the purpose of this study. The head nurses were first asked to indicate the aspects of leadership competencies that were considered important for them when managing their units ' activities. They were also required to choose their answers by using a five point Likert style scale, ranging from (1) not essential to (5) extremely essential with each statement. Then, they were asked to indicate leadership competency aspects that they were able to use during managing their units ' activities. They perceived their ability to use on five   Likert scales (from 1 = never / no to 5 = always / yes).

The alpha coefficient was .90 for knowledge of the competency part and .94 for the ability to use competency. The total response of head nurses was estimated by mean.   Mean scores of two formats of leadership competency were classified into a satisfactory level ($\geq$ 3 points) and unsatisfactory level (< 3 points).

Part (II): The leadership effectiveness scale was developed by **Guillén and Florent-Treacy (2011).** It contained 50 items and six dimensions covering envisioning (9 items); energizing (8 items); designing and aligning (6 items); rewarding and feedback (8 items); team building (11 items); and empowering (8 items). The head nurses provided their responses using a five Likert scale (1= strongly disagree and 5= strongly agree).

This scale was tested in Egypt by **Elhanafy and Hessewi (2021)** for internal consistency reliability. The alpha coefficient was .92. The total head nurses' responses were calculated by mean.   Mean scores of leadership effectiveness were categorized into fair (< 3 points), moderate (3-3.9 points) and high levels ($\geq$ 4 points).

Content validity and inter-rater reliability:

Five experts evaluated the three formats of leadership competency and effectiveness using a five Likert scale (1= inappropriate to study and 5 = appropriate to study). Consistency between experts was examined by Kendall's coefficient test for knowledge of competency (. 89), ability to use competency (. 90) and leadership effectiveness (. 95). Three format questionnaires were translated into Arabic language and re-translated to English for ensuring trustworthy and feasibility of the tool. 78 items were included in the final version of the questionnaire (the 28 aspects of competency scales and 50 items in effectiveness scale).

Pilot study and test-retest reliability:

Three format questionnaires were distributed to the same 20 head nurses at two different times for ensuring applicability and estimating the required time to fill each questionnaire. Test–retest reliability was .84 for knowledge of competency, .78 for the ability to use competency and .88 for leadership effectiveness. The pilot study sample was not included in the sample size of the study.

Data collection:

Data were collected using two formats of leadership competency questionnaires and one

format of leadership effectiveness questionnaire, implemented within the studied intervention training program. This program was designed as follows:

Intervention training program:

The purpose of the program: The leadership competency intervention program was designed to enhance the head's nurses' ability to acquire the necessary knowledge and skills and attitudes towards their leadership role to be effective nurse leaders in their units.

Content of the program: The program included leadership competency topics such as communication and relationship, decision-making, power and empowerment, delegation, change process, conflict resolution, problem-solving, stress and conflict management, research process, motivational strategies, workflow process, policy and procedure, staff education and development, time management, and interdisciplinary care coordination.

Program process

Pre-Intervention: Learning needs was evaluated for all head nurses using two formats of competency self-assessment and one format of leadership effectiveness. The purpose of the initial assessment was to recognize educational and training needs for preparing the learning content and the schedule of learning sessions.

Implementing intervention: Ninety head nurses were invited to participate in the intervention training program around leadership competencies. The researchers trained the head nurses using learning materials such as PowerPoint and learning strategies such as case studies, discussions, live scenarios and brainstorming sessions. The program was delivered in a classroom setting in the hospital.

Ninety head nurses attended eight learning sessions; each five-hour session was offered twice-weekly over one month period. Eight learning sessions comprised 4-day theoretical sessions and 4-day practical sessions. The first learning session consisted of a description of the intervention program. The description of the intervention program included explaining objectives, topics of leadership competencies and duration of learning sessions. Each learning session consisted of reviewing the learning content from the previous session. Inconsistencies were reviewed first, followed by an explanation of the new content. At the end of each session, the head nurses were also asked to explain any inconsistencies they received. Feedback from the learning session was taken through competency scenarios. In competency scenarios, each head nurse received a leadership competency ranking and they ranked the most frequent use of competency to the less frequent use of competency in their workplace.

Post and Follow-up intervention: In the post-intervention program, the same process of pre-intervention was immediately repeated using the same three format questionnaires. Follow-up test was approximately implemented three months after completion of the program. The same three self-assessment questionnaires were distributed to head nurses and they were asked to fill them out.

Ethical considerations: Approval from the ethics committee of the Faculty of Medicine at Alexandria University, Faculty of Nursing and head nurses was obtained before collecting data. All questionnaire data were handled with anonymity and confidentiality by removing head nurses' names and replacing them with coding numbers.

Statistical analysis: All analyses were carried out using SPSS version 15. Data were represented in percentage, mean and standard deviation. The paired samples t and Z tests were used to estimate mean for the self-assessment scores of head nurses before and after the leadership competency intervention program. Correlation and linear regression were applied to examine the impact of competency intervention on leadership effectiveness. Cronbach's alpha, Pearson's and Kendall's coefficients were used to test internal consistency, test–retest and inter-rater reliability respectively.

Results:

Demographic data, levels and scores

A half of the participants (50%) held bachelor degree. More than a third (35.6%) was in the age group between 40 and 49 years. Working

experience was equal or more than 30 years among 35.6% of participants (**Table 1**). After post and follow-up intervention, head nurses attained satisfactory levels of overall leadership competency (96.7 %, 92.2 %, respectively), their knowledge of competency (94.4 %, 91.1 % respectively) and ability to use competency (90.0 % and 84.4%). They also achieved a high level of leadership effectiveness (83.3% and 82.2 %, respectively) (**Table 2**).

Z test results of scores for overall fourteen aspects of knowledge of competency and ability to use competency demonstrated a statistically significant difference between mean scores of pre and post-intervention (Z = -6.065, p<. 05; Z= 5.852, p< .05 respectively) as well as mean scores of pre and follow-up intervention (Z =-6.058, p<. 05; Z= -5.811, p< .05 respectively) (**Table 3**). Z-test results revealed a statistically significant improvement in overall self-assessment competency post and follow-up leadership competency interventions (Z= - 6.051, p<. 05; -6.047, p< .05 respectively). The post and follow-up competency interventions improved the overall scores of the head nurses' self-assessment competency (M=4.09 and M=3.99 respectively) (**Table 3**). The results of knowledge of competency and ability of use competency throughout pre, post and follow-up interventions indicated that higher mean scores were demonstrated in workflow process, delegation, decision-making, motivation, policies and procedures, empowerment, problem-solving and change process, while lower mean scores were recorded in research process, staff education and time management (**Table 3**).

The Z test results of the mean scores of overall leadership effectiveness demonstrated a statistically significant difference between pre and post-intervention (Z= -5.962, p< .05) as well as between pre and follow-up intervention (Z= -5.877, p<. 05). So, these results revealed that the mean scores of post and follow-up interventions of leadership effectiveness (M = 4.04; M=3.97 respectively) were higher than the mean score of leadership effectiveness in pre-program (M =2.47) (**Table 4**). The highest mean scores were demonstrated in the six dimensions of leadership effectiveness throughout post and follow-up interventions (**Table 4**).

Impact of the intervention program

A highly positive association and direct effect between knowledge of competency and ability to use competency were found throughout the post (r =.71; B=.41, R^2 =. 50,) and follow-up intervention (r =.79; B=.43, R^2 =. 62). A highly positive relationship and direct influence between knowledge of competency and leadership effectiveness were revealed throughout the post (r =.64; B=.34, R^2 =. 41) and follow-up intervention (r =.75; B=.37, R^2 =. 57). Additionally, a high correlation and direct impact between the ability to use competency and leadership effectiveness were shown throughout the post (r =. 95; B=.88, R^2 =91) and follow-up intervention (r =.97; B=.86, R^2 =. 94) (**Table 5**). The highly positive and statistically significant correlation and regression tests between leadership competencies and effectiveness throughout the post (r=.90; B=.61, R^2 =. 81) and follow-up intervention (r=.94; B=.62, R^2 =. 88) confirmed that the leadership competency intervention program was effective in increasing and improving the leadership effectiveness levels among head nurses (**Table 5**).

Table (1): Demographic data of the participants (n=90)

	Frequency No.	Percentage (%)	Variable	Frequency No.	Percentage (%)
Age			**Experience**		
< 30	5	5.5	< 10	6	6.7
30-39	30	33.3	10-19	23	25.5
40-49	32	35.6	20-29	29	32.2
≥ 50	23	25.6	≥ 30	32	35.6
Education degree					
Bachelor	45	50.0			
Diploma of technical nursing institute	10	11.1			
Diploma of secondary nursing school	35	38.9			

Table (2): Levels of leadership competencies and effectiveness of head nurses (n=90)

Leadership Competency	Head nurse			Leadership effectiveness	Head nurse		
	Pre No. (%)	Post No. (%)	Follow-Up No. (%)		Pre No. (%)	Post No. (%)	Follow-up No. (%)
Overall competencies				**Effectiveness**			
Satisfactory	30(33.3)	87(96.7)	83(92.2)	High	0(0.0)	75 (83.3)	74 (82.2)
Unsatisfactory	60(66.7)	3(3.3)	7(7.8)	Moderate	16(17.8)	9(10.0)	8 (8.9)
Knowledge				fair	74 (82.2)	6(6.7)	8(8.9)
Satisfactory	25(27.7)	85(94.4)	82(91.1)				
Unsatisfactory	65(72.2)	5(5.6)	8(8.9)				
Use							
Satisfactory	20(22.2)	81(90.0)	76 (84.4)				
Unsatisfactory	70(77.8)	9(10.0)	14(15.6)				

Table (3): Mean scores of leadership competencies of head nurses (n=90)

Leadership competencies	Mean scores			*Z test (P-value)	
	Pre- Mean± SD	Post Mean± SD	Follow-up Mean± SD	Pre-post	Pre-follow-up
Overall leadership competencies	**2.64±.46**	**4.09±.61**	**3.99±.64**	**-6.051(.000)**	**-6.047(.000)**
Overall knowledge of competency	**2.67±.86**	**4.24±56**	**4.16±47**	**-6.065(.000)**	**-6.058(.000)**
Decision-making	2.78±.41	4.38±.56	4.26±.52	-6.167 (.000)	-6.195(.000)
Power and empowerment	2.66±.59	4.30±.64	4.22±.73	-5.947(.000)	-5.684(.000)
Delegation	2.70±.54	4.42±52	4.34±.62	-6.151(.000)	-6.173(.000)
Change process	2.74±.48	4.24±.51	4.16±.46	-6.190(.000)	-6.234(.000)
Conflict resolution	2.60±.60	4.18±.48	4.12±.43	- 6.161(.000)	-6.181 (.000)
Problem-solving	2.78±.64	4.28±.53	4.20±.49	-6.036(.000)	-6.144(.000)
Stress management	2.74±.59	4.16±.58	4.04±.53	-5.835(.000)	-5.784(.000)
Research process	2.50±.73	4.04±.69	4.00±.63	-5.954(.000)	-6.190(.000)
Motivational strategies	2.64±.63	4.36±.56	4.24±.71	-6.080(.000)	-5.791(.000)
Workflow process	2.88±.55	4.44±.57	4.30±.54	-6.102(.000)	-5.986(.000)
Policies and procedures	2.84±.50	4.32±.65	4.22±.58	-5.821(.000)	-5.833(.000)
Staff education	2.58±.67	4.10±.73	4.02±.71	-5.611(.000)	-5.753(.000)
Time management	2.52±.70	4.08±.72	4.06±.65	-5.875(.000)	-6.099(.000)
Interdisciplinary coordination	2.54±.70	4.14±.57	4.08±.56	-5.942(.000)	-6.176(.000)
Overall ability to use competency	**2.60±.47**	**3.93±.83**	**3.85±.87**	**-5.852(.000)**	**-5.811(.000)**
Decision-making	2.66±.59	4.00±.80	3.88±.97	-5.401(.000)	-5.021(.000)
Power and empowerment	2.68±.65	3.96±.90	3.90±.86	-5.322(.000)	-5.158(.000)
Delegation	2.64±.59	4.00±.45	3.98±.53	-4.611(.000)	-4.561(.000)
Change process	2.50±.54	3.94±.41	3.84±.66	-5.570(.000)	-5.431(.000)
Conflict resolution	2.68±.65	3.94±.67	3.80±.68	-4. 674(.000)	-4.353(.000)
Problem-solving	2.60±.49	3.98±.26	3.86±.78	-5.566(.000)	-4.955(.000)
Stress management	2.54±.59	3.88±.96	3.80±.94	-5.527(.000)	-5.169(.000)
Research process	2.42±.75	3.76±.79	3.68±.58	-5.467(.000)	-5.108(.000)
Motivational strategies	2.60±.63	4.04±.63	3.96±.96	-5.540(.000)	-5.445(.000)
Workflow process	2.78±.46	4.04±.49	4.00±.98	- 4.978(.000)	-4.955(.000)
Policies and procedures	2.72±.49	3.96±.68	3.94±.98	-5.308(.000)	-5.238(.000)
Staff education	2.54±.67	3.82±.98	3.64±.51	-5.212(.000)	-5.068(.000)
Time management	2.56±.61	3.86±.91	3.82±.73	-.5.698(.000)	-5.207(.000)
Interdisciplinary coordination	2.58±.64	3.94±.84	3.90±.81	-.5.619(.000)	-5.607(.000)

*Wilcoxon Signed Ranks Test was Significant at 0.05

Table (4): Mean score of Leadership effectiveness of head nurses (n=90)

Leadership effectiveness	Mean scores			*Z test (p-value)	
	Pre-Mean± SD	Post Mean± SD	Follow-up Mean± SD	Pre-post	Pre- follow-up
Overall Leadership Effectiveness	**2.47±.54**	**4.04±.90**	**3.97±. 95**	**-5.962(.000)**	**-5.877(.000)**
Envisioning	2.46±.60	4.06±.90	4. 00±. 96	-5. 483(.000)	-5.238(.000)
Energizing	2.34±.66	4.08±.92	3. 98± . 94	-5.155(.000)	-4.892(.000)
Designing & aligning	2.48±.40	4.02±.90	3. 94±. 98	-5.808(.000)	-5. 894(.000)
Rewarding & feedback	2.52±.56	4.00±.88	3. 96±. 95	-5.396(.000)	-5.226(.000)
Team building	2.50±.52	4.10±.98	4. 04±. 94	-4.721(.000)	-4.495(.000)
Empowering	2.54±.48	4.02±.86	3. 92±.97	-6.038(.000)	-5.950(.000)

* Wilcoxon Signed Ranks Test was Significant at 0.05

Table (5): Impact of competency intervention on head nurses' leadership effectiveness

Variables	Leadership competencies of head nurses														
	Pre					Post					Follow-up				
	r	Linear Regressing				r	Linear Regressing				r	Linear Regressing			
		B	R^2	Std. Error	t-test (sig.)		B	R^2	Std. Error	t test (sig.)		B	R^2	Std. Error	t test (sig.)
Leadership effectiveness	.28**	.25	.08	.124	2.074 (.04)	.90**	.61	.81	.042	14.687 (.000)	.94**	.62	.88	.032	19.124 (.000)

Variables	Knowledge of competency														
	Pre					Post					Follow-up				
	r	Linear Regressing				r	Linear Regressing				r	Linear Regressing			
		B	R^2	Std. Error	t-test (sig.)		B	R^2	Std. Error	t-test (sig.)		B	R^2	Std. Error	t-test (sig.)
Ability to use competency	.95**	.93	.90	.043	21.849 (.000)	.71**	.41	.50	.059	7.005 (.000)	.79**	.43	.62	.048	8.985 (.000)
Leadership effectiveness	.64**	.35	.41	.061	5.771 (.000)	.64**	.34	.41	.059	5.875 (.000)	.75**	.37	.57	.046	8.009 (.000)

Variables	Ability to use competency														
	Pre					Post					Follow-up				
	r	Linear Regressing				r	Linear Regressing				r	Linear Regressing			
		B	R^2	Std. Error	t-test (sig.)		B	R^2	Std. Error	t-test (sig.)		B	R^2	Std. Error	t-test (sig.)
Leadership effectiveness	.320**	.29	.10	.126	2.341(.02)	.95**	.88	.91	.040	22.194 (.000)	.97**	.86	.94	.032	27.571 (.000)

** Correlation (r) was sig. at 0.01

Discussion

Head nurses play pivotal roles in creating a healthy work environment and engaging staff nurses in nursing care practice within the health care settings. So, there is an exacerbated need for effective and resilient nurse leaders for guiding nurses to deliver a high-quality and cost-effective care that ensures positive patient and organizational outcomes (**Manojlovich, 2005;** **Kantanen et al., 2017; Aqtash et al., 2022).** The head nurses should develop leadership core competencies before being promoted to other roles as nurse managers through the educational training programs (**Hariyati &Ungsianik, 2018; García et al., 2021; Paarima et al., 2022).** Therefore, this study aimed to evaluate the impact of the leadership competency intervention program on the leadership effectiveness of head nurses.

Enhancing leadership competencies through implementing an active learning approach may be a useful strategy for improving leaders' effectiveness (**Hariyati &Ungsianik, 2018).** The study revealed that an intervention program of leadership competency positively improved the leadership competence and effectiveness of head nurses. It showed that head nurses had satisfactory levels of leadership competency, knowledge of competency and ability to use competency with a high level of leadership effectiveness after post and follow-up intervention. Total mean scores in self-assessment of the pre-and post-intervention program of leadership competency had increased with statistically significant improvement in head nurses' self-assessment of leadership effectiveness, head nurses' knowledge of competency and their ability to use competency.

These results of the present study were consistent with other previous studies in many countries from 2014 to 2022, which reported that despite nursing leadership competency being an important managerial core competency; it was at an insufficient level and required improvement. They addressed the need for first-line managers to prepare themselves for their roles and responsibilities through increasing their competencies (**Titzer et al., 2014; Dehghani et al., 2016; Latekval, 2017; Göktepe et al. , 2018; Hariyati &Ungsianik, 2018; Nghe et al.,2020 ; Paarima et al., 2020; Aqtash et al.,2022; Aljabali,, 2022)**. **Meretoja et al. (2004)** emphasized that the leadership competency of head nurses required the development, and collective construction of guidelines as a development strategy for enhancing competency.

The findings of this study that showed improvements in leadership competencies and effectiveness among head nurses in post and follow-up program can be attributed to the fact that those head nurses with greater leadership abilities were inclined to expend greater efforts to fulfill their leadership roles. They recognized their skills, abilities and knowledge by doing their best under any condition to fulfill their leadership role. Additionally, increasing knowledge of competency and the ability to use competencies helped them in setting directions for managing work, thus

achieving their responsibilities and overcoming the difficulties and obstacles in their work.

The current study found that there was a statistically significant difference between the mean scores of pre, post and follow –up intervention program regarding self-assessment of fourteen aspects of knowledge and ability to use leadership competency. It indicated that the leadership competency intervention program used in this study enhanced the knowledge and ability of head nurses to use leadership competency in their management work. Also, there were relationships and direct effects between head nurses' knowledge of leadership competency and their ability to use competency among head nurses. A Similar finding was found in the study of **Latekval (2017), Nghe et al. (2020) and Aqtash (2022).**

It was worth noticing that post and follow-up intervention mean scores of head nurses' knowledge and ability to use competency in the workflow process, delegation, decision-making, motivation, policies and procedures, empowerment, problem-solving and change process was higher than other aspects. Similar results were found in USA **(Latekval, 2017),** Turkish (Göktepe et al. , 2018) , Iran **(Moghaddam et al.,2019)** and two Egyptian studies **(Ahmed, & Abd-ElGhani, 2021; Ahmed et al., 2021)** which reported that the most applicable core competency skills among first-line nurse managers were the management skills followed by the teaching skills. However, this study was incongruent with the results was found in the UAE study **(Aqtash et al. , 2022)** that utilized different study design and sample size.

These results of the present study were related to the fact that head nurses after post and follow-up intervention became more able, confident, knowledgeable and skillful to use leadership competencies in their management tasks. They were more efficient in accomplishing leadership duties such as delegating nursing tasks, participating with nursing staff in decision making for solving workplace problems, empowering and inspiring nurses through motivational strategies. They were able to effectively implement nursing workplace policies and procedures and make change processes in their workplace. The ability of

head nurses to use competencies may be also affected by the frequency and how to use these competencies in daily nursing tasks for achieving high-quality nursing care.

The findings of this study were similar to the studies of Ahmed **et al. (2021) and Azizollah (2019)** which reported that first-line nurse managers applied knowledge and skills of management and problem-solving process in managing their unit, staff and patient care and dealing with the individual problems of staff and patients. The results of this study were supported by **Chuang (2013)** who stated that management effectiveness is task-oriented.

The current study throughout post and follow-up intervention showed lower scores among head nurses in the research process, staff education and time management, reflecting less attention towards these aspects. This can be explained by the fact that head nurses may not view staff education and research process as a primary responsibility of nurse managers. Head nurses are often focused on and loaded with managerial roles which may be affected their time management. The present results were in agreement with **Chase's study (2010) and Paarima et al. study (2022).** Nevertheless, these results were inconsistent with **Ofei et al. (2020)** and **Ahmed et al. (2021)** studies who found that teaching and research skills were the most applicable core competency among first-line nurse managers as they used different questionnaire tools.

Regarding leadership effectiveness, it is very crucial for all health care providers, especially head nurses manage their daily activities **(Abou, E, 2017; Kantanen et al., 2017).** The present study found that there is a statistically significant enhancement in the leadership effectiveness of head nurses after post and follow-up intervention in comparison to pre-intervention programs. Furthermore, the highest scores were noticed in the six dimensions of leadership effectiveness.

These results could be related to the fact that head nurses would be more effective when increase their knowledge of competency and abilities to use competency and gain skills that give them a sense of self-confidence and responsibility in their managerial positions. This

improvement will positively affect their leadership effectiveness and role. This study was congruent with two Egyptian studies and Qassim study which recorded that the leadership effectiveness of head nurses improved after implementing the training program **(Bakshawan et al., 2016, Kantanen et al., 2017; Alharbi, 2022).**

Conclusion

The study revealed that intervention programs utilized in this work improving the leadership competencies and effectiveness of head nurses. The competency intervention program led to a significant increase in mean scores of head nurses' leadership competency to a satisfactory level and head nurses' effectiveness to a higher level. On the other hand, the leadership competency level had a statistically significant and direct effect on leadership effectiveness level. This finding was demonstrated in a statistically significant correlation and direct impact of knowledge of competency and ability to use competency on head nurses' leadership effectiveness.

There was a significant difference between mean scores of pre-and post and follow-up interventions related to fourteen aspects of knowledge, fourteen aspects of the ability to use competencies and six dimensions of leadership effectiveness. High mean scores were recorded for eight competency aspects; workflow process, delegation, decision making, motivation, policies and procedures, empowerment, problem-solving and change process , while low mean scores were recorded in the research process, staff education and time management.

Implications for nursing management:

A leadership competency intervention program is essential to ensure the crucial role of the nurse manager in enhancing the quality of nursing care and the future success of the nursing profession. Therefore, it is necessary to implement a competency intervention training program in healthcare settings. Leadership competencies should be integrated into orientation and continuous training programs of head nurses. This would encourage them to demonstrate leadership competencies in managerial positions and provide

opportunities to improve their leadership effectiveness and enhance nurses, organizational and patient outcomes.

The necessary resources and flexible schedules should be provided for encouraging head nurses to participate in these programs. They should also be provided with support and empowered to continuously improve their competencies. Additionally, head nurses should be encouraged to disclose their management work problems, and provided efficient feedback. Thus, the head nurses will be role models for nursing staff depending on acquiring knowledge and skills in their leadership role.

Further research:

Further studies are needed to focus on demonstrating the effect of the leadership competency intervention program on quality of nursing care, head nurses' performance and engagement. In addition, studies are needed to develop strategies in the workplace to enhance leadership competencies among head nurses.

References:

Abou, E. (2017). Relationship between Leadership Self-Efficacy and Leadership Effectiveness of First-Line Nurse Managers. Arts Social Sci J, an open-access journal, 8 (6):1-9. doi:10.4172/2151-6200.1000310

Ahmed, H.E., sleem, W.F., & El-Sayed, R.I. (2021). Core competencies elements among first-line nurse managers at port-said governmental hospitals. Port Said Scientific Journal of Nursing, 8 (3): 303-326.

Ahmed, F.,M., & Abd-ElGhani, A.M. (2021). First Line Nurse Managers' Managerial Competency and its Relationship with their Staff Nurses' Work Engagement at Main Mansoura University Hospital. Egyptian Journal of Health Care (EJH), 12 (1):471-485.

Alharbi, E.,S. (2022). Leadership Training Program and Their Effect On Nursing Job Performance and Head Nurses Competency. CIMJ. 2 (22) :1-29 Retrieve from https://www.eimj.org/uplode/images/photo/Leadership_Training_Program_and_Their_Effect_On_Nursing_Job_Performance_and_Head_Nurses_Competency_..pdf

Aljabali, S.M (2022). The Effect of Managerial Competencies on Service Quality Field Study on The Jordanian Private Hospitals at Amman (Master's thesis). Business Faculty, Middle East University, Jordan.

Alomairi, S.B., El Seesy, N., & Rajab, A.A. (2018). Managerial and Leadership Competencies of First-Line Nurse Managers in Makkah City: Mixed-Method Approach. IOSR Journal of Nursing and Health Science, 7(1) : 53-60

American Nursing Association (2018) .Competency Model : The American Nurses Association's Leadership. Retrieve from https://www.nursingworld.org/continuing-education/ce subcategories/leadership/

Aqtash, S., Alnusair, H. , Alnjadat, R., Fonbuena, M., & Perinchery, S. (2022). Evaluation of the Impact of an Education Program on Self-Reported Leadership and Management Competence among Nurse Managers. SAGE Open Nursing; 8:1-10. https:// doi.org/ 10.1177/23779608221106450.

Azizollah, A., Sarani, H., Mohammadi, S., & Robabi, H. (2016). Organizational Commitment in Nurses. International Journal of Advanced Sciences, 7. 1841-1846.

Bakshawan, E. L., Ahmed, Z., Shaban, F. M.,& EL-Shaikh, A. A., & Elsayed, K. A (2016). Situational Leadership And Emotional Intelligence Contribution To Promote Nursing Leaders Effectiveness. Tanta Scientific Nursing Journal, 10(7), 132-154.

Chase, L.K (2010). Nurse manager competencies (Doctor of Philosophy degree in Nursing in the Graduate College of The University of Iowa. Retrieved from https://iro.uiowa.edu/esploro/outputs/doctoral/Nurse-manager-competencies/9983777291202771

Chuang, S. (2013). Essential skills for leadership effectiveness in diverse workplace development. Online Journal for Workforce Education and Development, 6(1), 5. Retrieved from

https://opensiuc.lib.siu.edu/cgi/viewcontent.cgi? article= 1133&context=ojwedb

Dehghani, K., Nasiriani, K., & Salimi, T. (2016). Requirements for nurse supervisor training: A qualitative content analysis. Iranian journal of nursing and midwifery research, 21. 63-70.

Elhadad, A.E., Sleem, W.F., Ahmed, M.F. (2022). Association Between Leadership Competency, Quality of Work and Readiness for Change Among Head Nurses. Mansoura Nursing Journal (MNJ), 9. (1): 189-200.

Elhanafy, E.Y., & El Hessewi, G.M.S. (2021). Effect of Talent Management Training Program on Head Nurses Leadership Effectiveness. Egyptian Journal of Health Care , (12) 4: 351-361

García, A. G., Pinto-Carral, A., Villorejo, J. S., & Marqués-Sánchez, P. (2020). Nurse Manager Core Competencies: A Proposal in the Spanish Health System. International journal of environmental research and public health, 17(9), 3173.

García, A. G., Pinto-Carral, A., Villorejo, J. S., & Marqués-Sánchez, P (2021). Nurse managers' competencies: A scoping review. Journal of Nursing Management, 29(6): 1410-1419.

Göktepe, N., Turkmen, E., Badir, A., Hayta, O., Karabuga Yakar, H., & Buyukgonenc, L. (2018). Development of Managerial Competencies for First-level Nurse Managers in Turkey. International Journal of Caring Sciences, 11(2), 1096–1103. Retrieved from http://www.internationaljournalofcaringscience s. org/docs/52_goktepe_original_10_2.pdf

Guillén, L., & Florent-Treacy, E. (2011) . Emotional Intelligence and Leadership Effectiveness: The Mediating Influence of Collaborative Behaviors. Journal of Organizational Behavior. Retrieved from https://flora.insead.edu/fichiersti_wp/inseadwp2 011/2011-23.pdf

Hariyati, R. T. S., &Ungsianik, T (2018). Improving the interpersonal competencies of head nurses through Peplau's theoretical active learning approach. Enfermeriaclinica, 28, 149- 153.

Kantanen, K., Kaunonen, M., Helminen, M., & Suominen, T. (2017). Leadership and management competencies of head nurses and directors of nursing in Finnish social and health care. J. Res. Nurs., 22:228–244.

Latekval, M.A. (2017). The Implementation of a Leadership Development Program and Its Impact on Nurse Managers Self- Reported Competency Level. (Doctor of Nursing Practice Degree) , Regis University, USA.

Mahdi, I.S., Faraj, R.K. (2022) . Evaluation of Leadership Competencies among Nurse Managers. MOSUL JOURNAL OF NURSING. Mosul Journal of Nursing 10(3) : 154-160 .DOI: 10.33899/mjn.2022.175418

Manojlovich, M. (2005) Effect of Nursing Leadership on Hospital Nurses' Professional Practice Behaviors. Journal of Nursing Management, pp: 363-371.

Meretoja, R., Isoaho, H., &Lenio-Kilp, H., (2004): Nurse Competence Scale, Development and Psychometric Testing. Journal of Advanced Nursing.47 (2): 124-133.

Moghaddam, N. M., Jame, S., Rafiei, S., Sarem, A. A., Ghamchili, A., & Shafii, M. (2019). Managerial competencies of head nurses: a model and assessment tool. British journal of nursing (Mark Allen Publishing), 28(1), 30–37.

Munro, C. L., & Hope, A. A. (2020). Healthy Work Environment: Resolutions for 2020. American journal of critical care: an official publication. The American Association of Critical-Care Nurses, 29(1), 4–6

Nghe, M., Hart, J., Ferry, S., Hutchins, L., & Lebet, R. (2020). Developing Leadership Competencies in Midlevel Nurse Leaders: An Innovative Approach. JONA: The Journal of Nursing Administration, 50(9), 481-488. https:// doi.org/10.1097/NNA.0000000000000920.

Ofei, A. M. A., Paarima, Y., & Barnes, T. (2020). Exploring the management competencies of nurse managers in the Greater Accra Region. Ghana International Journal of Africa Nursing Sciences, 13, 100248.

Paarima, Y., Kwashie, A.A., Asamani ,J., A., & Ofei, A.,A.,M (2022). Leadership competencies of first-line nurse managers: a quantitative study. Leadership in Health Services, 35 (3): 338-354

Paarima, Y., Ofei, A. M. A., & Kwashie, A. A. (2020). Managerial Competencies of Nurse Managers in Ghana. Africa Journal of Nursing and Midwifery, 22(2), 20.

Personality, D.A .(1999). Self-efficacy and managerial leadership behavior. (Master's thesis) . University of Western Ontario.

Titzer, J. L., Shirey, M. R., & Hauck, S. (2014). A nurse manager succession planning model with

.

associated empirical outcomes. JONA: The Journal of Nursing Administration, 44(1), 37–46. https://doi.org/10.1097/nna.0000000000000019.

Wang , S., Tong, J., Wang, Y. , Zhang, D. (2022). A Study on Nurse Manager Competency Model of Tertiary General Hospitals in China. Int. J. Environ. Res. Public Health 19, 8513:1-12. https://doi.org/10.3390/ijerph19148513

Wood, R. (2004) The Effect of Self-efficacy, Transformational Leadership and Trust on Leadership Effectiveness of Senior Student Affairs Officer. Published Dissertation, School of Leadership Study, Regent University