Relation between Leadership Competencies and Innovative work Behavior of Nurses

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Abstract

Background: Nurses are the largest human resource group and backbone of every health care system. Head nurses are the key to professional communication between the top management and staff nurses, their role is highly important in the success of healthcare organizations so this requires certain skills and practices are very important to increase nurses innovative work behavior. **Aim: to** assess the relation between leadership competencies and innovative work behavior of nurses. **Subjects and Method: Research design:** A descriptive correlation design was used to achieve the aim of this study. **Setting:** The study was conducted El- Sinbellawin General Hospital, Dakahlia, Egypt. **Subjects:** Simple random sample from nurses (n= 240), A convenient sample of (30) head nurses were selected. **Tools**: leadership competency scale and innovative work behavior scale, **Results:** (47.9%) of the studied nurses reported that head nurses had a high level of leadership competencies. While, (46.7%) of head nurses reported that nurses had a high level of innovative work behavior. **Conclusion:** there was statistically significant positive correlation between leadership competencies, innovative work behavior. **Recommendations:** Conduct workshops on innovative thinking and develop strategies to enhance nurses' level of innovative work behavior, As well administer continuous learning about modern and innovative ways of leadership to update and promote leadership competencies of head nurses.

Key words: Leadership competencies and nurses innovative work behavior.

Introduction

Nurses are charged with maintaining and improving quality of care, managing with limited resources, working with professionals and inter professionally with various generations and cultures, adapting to technological advances and preparing for constant changes. These changes require nurses who are committed, involved, flexible and innovative. The nurses of today must be a coach, teacher and facilitator [1].

Now, more than ever, we need knowledge, expertise and the capacity of nurses to bring solutions to our health-care challenges and future directions, These challenges and changes require nurses to exercise leadership in all domains including; clinical care, management, education, researcher and policymakers,

This requirement also needs a competent nursing leaders at all levels Team, patient and system outcomes all benefit when nurses in all areas and levels maximize their leadership potential[2].

Nursing leadership plays a vital role in shaping outcomes for healthcare organizations, personnel and patients. With much of the leadership workforce set to retire in the near future, identifying factors that positively contribute to the development of leadership in nurses is of utmost importance [3].

Nurse leader need the combination of knowledge, skills, personal characteristics, and individual and social behaviors to perform their job which are leadership competencies [4]. Leadership competencies help nurse leader to lead

self, lead their staff and lead their organization [5].

Nurse leader ought to encourage nurses to use their knowledge and skills to change the old ways of thinking and practicing and to develop new ways of working that actually improve nursing practice. It is important in order to improve the quality of care delivered, to ensure patient safety and also to reduce the cost of health care which is called innovative work behavior[6].

Innovative work behavior is also vital to further develop of nursing profession and to ensure that nurses are equipped to face the challenges ahead, stay abreast with technology and service requirements and to be able to function effectively within challenging environments. It is agreed that nurses are perfectly placed to develop creative and innovative strategies that can make a huge difference in the lives of patients [7].

Significance of the study:
Globalization, rapid technological changes in the 21st century, and new competitors have shaped a highly today's competitive and distribution market. Thus, innovative work behaviors among nurses is becoming increasingly necessary due to the changing environmental and economic dynamics, customer needs, and increasing competition for organizations, this can be achieved through presence of leadership competencies[8].

Numerous countries have identified leadership competencies a priority for most healthcare organizations, as staff nurses require flexible and inclusive workplaces where their interests and needs are considered .So that organizations that have an intense culture of recognizing employees through competent leaders have a 31% lower turnover rate than organizations that have in competent leader[8].So the researcher will carried out this study to assess the relationship between leadership competencies and innovative work behaviors of nurses.

Aim of the study:
The aim of the study was to assess the relation between leadership competencies and innovative work behaviors of nurses.

Research Questions:
- What is the level of leadership competencies of head nurses?
- What is the level of Nurses innovative work behavior?
- Is there relation between leadership competencies and nurses innovative work behavior.

Subjects and methods:

Research design:
A descriptive correlational research design was adopted to carry out this study.

Study setting:
The study will be conducted at El-Sinbelawin General Hospital, Dakahlia, Egypt. The hospital containing (250 beds) composed of four buildings.

Study subjects:
Two types of samples were utilized to collect data for the current study. **The first one** was a convenient sample of 30 head nurses working at El- Sinbelawin General Hospital at the time of data collection and agrees to participate in the study**. The second** was simple random sample was selected from nurses at El- Sinbelawin General Hospital .who agree to participate in the study (n=240).

Tools of data collection:
Two tools were used to collect necessary data.
Tool I: Leadership competency scale: it consists of two parts:

I: Leadership competency scale: It was developed by **Charles** [9].Composed of two parts:
Part(I): Socio demographic and work-related characteristics of nurses and head nurses, to collect data about; age, gender, years of experience, marital status, level of education and department type.

Part (II): to assess frequency and intensity of leadership competencies of head nurses as perceived by nurses. It consists of (53) items grouped under11 domains namely Influencing and motivating (5 items), Learning (5items), Managing (5items), Envisioning (4 items), Teaming (5 items), Initiating (5 items), Ethical behaviors (5 items), Developing human capital (5 items), Communicating (4 items), Decision making (5 items), Changing (5 items).

Scoring system: The responses of nurses to the scale related to frequency of leadership competencies were measured on a five- point Likert scale ranging from (0– 4). Where: 0= never performs this task, 1= Performs this task yearly, 2= Performs this task monthly, 3= Performs this task weekly and 4= Performs this task daily. Similarly, the Intensity of leadership competencies were measured from nurses point of view on a five-point Likert scale ranging from (0 – 4)where: 0=not Intense, 1=somewhat Intense, 2=moderately Intense, 3=highly Intense and 4=extremely Intense[9] The total level of leadership competencies among head nurses considered: Low leadership competencies if the score less than 50%.

- Moderate leadership competencies if the score range from 50% to 75%.
- High leadership competencies if the score more than 75%[9].

Too II: Innovative work behavior scale:

It was developed by **De Jong and Den Hartog** [10]. It was used to measure innovative work behavior level of nurses as perceived by head nurses. It consists of 16-items grouped under five domains namely: problem recognition (2 items), idea generation (3 items), idea promotion (2 items), idea application (3 items) and innovation output (6 items).

Scoring system:

Nurses' responses were measured on a five-point Likert scale ranging from 1= never, 2 = rarely, 3= sometimes, 4= often, and 5= always. The scores of each domains were summed and the total divided by numbers of items. These scores were converted into percent score. The total level of innovative work behavior among nurses considered:

- Low innovative work behavior if the score less than 50%.
- Moderate innovative work behavior if the score range from 50% to 75%.
- High innovative work behavior if the score more than 75% [10].

Content Validity and Reliability:

The study tools were translated into Arabic language. Face and content validity were conducted by five experts from faculty of nursing at Zagazig University and two experts from El sinbellawin general hospital. Content and face validity sheet involved two parts: the first part included the opinions of the experts for each item that were recorded on a two-point scale: relevant, and not relevant; the second part covered general or overall opinion about the form which express their opinions and comments on the tools for clarity, applicability, comprehensiveness, understanding, any suggestions for any additional or omissions of items and ease for implementation. According to their opinions, all recommended modifications were performed by the researcher. Reliability: The questionnaires were tested for its reliability: the Cronbach's alpha coefficient was used to measure the internal consistency and homogeneity of the items composing each dimension of the tool.

Fieldwork

The preparatory phase was done by printing questionnaire forms more than the required sample size in order to maintain the complete sample size and also to compensate for the forms with missing data. Then the data collection phase of this study was executed during the morning, afternoon and night shifts in three days per weeks. It was lasting two months from mid-November 2022 to mid-january2023. Also, explaining orally the purpose of the study and ways to fill in the questionnaire sheets briefly to the nurses before the beginning of their answer. The filled forms were collected in time and

revised to check their completeness to avoid any missing data.

Pilot study:

The pilot study was conducted to assess the tool's clarity and feasibility and to identify the obstacles of applicability, the pilot sample included 24 staff nurses and three head nurses (10% of the study sample) selected from the study setting. No modifications were done and the pilot sample was included in the main study sample. The pilot study also served in estimating the time needed for filling out the forms that took from 15-20 minutes.

Administrative and ethical considerations:

An official letters obtained from the dean of faculty of nursing at Zagazig University to El- Sinbelawin General Hospital manager and nursing director to request permission and cooperation for conducting this study, then oral official permission from the nursing director and from the head nurse of each unit to their nursing staff after explaining the nature and the aim of the work.

The study was approved by Research Ethics committee (REC) of the faculty of nursing, Zagazig University with the code of (M.DZU.NUR\194\17\7\2022), approval to conduct the study was obtained from the medical and nursing directors of El-Sinbellawin General Hospital .and the head nurses of the units after explaining the aim of the study. The agreement for participation of the study was taken after fully explanation of the aim of the study. Participants were given the opportunity to refuse the participation, and they were notified that they could withdraw at any time. Also, they will be assured that the information would be confidential and used for the research purpose only. The researcher will assure maintaining anonymity and confidentiality of subjects 'data.

Statistical analysis:

Data were organized, categorized, tabulated and statistically analyzed by using the Statistical Package for the Social Sciences (SPSS), version 23.0 IBM Corp., Armonk, NY: USA.. Data were present using descriptive statistics in the form of the mean ± SD and qualitative data were expressed as absolute frequencies (number) & relative frequencies (percentage). Percent of categorical variables were compared using Chi square test. Pearson correlation coefficient was calculated to assess relationship between various study variables, (+) sign indicate direct correlation & (-) sign indicate inverse correlation, also values near to 1 indicate strong correlation & values near 0 indicate weak correlation. All tests were two sided. P-value < 0.05 was considered statistically significant, p and p-value ≥ 0.05 was considered statistically insignificant. β (regression coefficients) & R square test for Multiple linear regression that is a predictive analysis. Multiple linear regression was used to describe data and to explain the relationship between one dependent continues variable and one or more continues independent variable

Results:

Near from half of studied nurses (47.9%) reported that the head nurses had a high level of leadership competencies, while (27.9%) of nurses reported that the head nurses had a low level of Leadership competencies,

Table(1): This table shows that the highest percentage of head nurses were married and all of them were females (80%, 100% respectively) with mean age and years of experiences in nursing were (37.5±8.3.& 9.3±8.7, respectively). half of head nurses had a Bachelor in nursing (50%).

Table 2: This table shows that the highest percentage of nurses were females , married, had nursing diploma and were in the age group range between 20 – 30 years old (95.8%,91.7%, 45.8%, &62.5%, respectively). Half of nurses had less than five years of experience in nursing (50%).

Table (3): this table clarify that the highest mean score of Leadership competencies domains were related to Ethical behaviors, Influencing and motivating and Teaming (21.106±2.489,19.787±3.045,16.963±3.279, respectively) ,while the lowest mean score was related to developing human capital and communicating (10.302±2.041, 11.542±4.312, respectively).

Figure (1): This figure show that slightly half of nurses reported that head nurses had a high level of leadership competencies.

Table (4): revealed that the highest mean score of innovative work behavior domains was for problem recognition score (17.12±4.234) and followed by Idea Generation score (14.876±5.165). While the lowest mean percent score was for idea application with (10.423±3.814)

Figure (2): This figure shows that slightly half of head nurses reported that nurses had a high level of Innovative work behavior (46.7%).

Table (5): Shows there were a statistically significance difference between personal characteristics of nurses regarding age, years of experience and educational qualifications and their perception of leadership competencies at p value< 0.05, it is cleared that nurses who aged from20-30 years old perceived that head nurses had low leadership competencies, on the other hand nurses who had more than ten years of experience revealed that head nurses had low level of leadership competencies**.**

Table (6): Shows there were a statistically significance difference between personal characteristics of head nurses and their perception about innovative work behavior of nurses regarding age, years of experience and educational qualifications at p value<0.05.

Discussion:

Leadership competencies have often been seen as a vital element and feature of management that influence the level of commitment of employees within the organization and have the possibility to boost organization effectiveness, innovative work behaviors among staff nurses, job satisfaction, as well as a sense of confidence about problem solving in order to achieve the organizational objectives **Abasilim et al. (11)**.

Professional development can help achieving sustainable development and enhances the quality of professionals or skilled labor force in an organization or a country through access to education and training. It enhances professional knowledge, skills, competence, and effectiveness. Professional development leads to increased efficiency and productivity of workforce in an economy and in turn helps building human resource development in a country **(12)**. Therefore, the aim of this study was to assess the relation between head nurses leadership competencies and nurses innovative work behaviors.

Regarding personal characteristics of head nurses, the current study revealed that the highest percentage of head nurses were married and all of them were female. From the research investigator point of view, the highest percentage of them were females could be due to the high numbers of students who enter the faculty or school of nursing are females and the main core of nursing occupation is feminists.

This result was supported by **Asurakkody and Kim(13),** who conducted across-sectional descriptive study in Korea to explore the relationship between knowledge sharing and innovative work by assessing the mediating role of self-leadership, and found that the highest proportion of studied nurse were females. Likewise, a study carried out by **Aqtash et al. (14)** in United Arab Emirates about evaluation of the impact of an education program on self-reported leadership and management competence among nurse managers, reported that most of participants were married.

In addition, the current study represented that the studied nurses' mean age and years of experiences in nursing were (37.5±8.3, 9.3±8.7, respectively). Slightly more than half of head nurses had a Bachelor in nursing. This result was in accordance with **Ochonma et al.** [15] in Nigeria, entitled "Education and Hospital Manager's Administrative Competency: What Impact is of a Higher Degree?", and stated that the most of studied nurses had more than 5 years of experience and had a Bachelor in nursing. In contrast, a study carried out by **González et al.** [16]. Who conducted a study in Spain about nurse manager core competencies; found that the mean age of the studied respondents was 49.52±11.02 years old.

Concerning personal characteristics of nurses, the current study reflected that the highest percentage of nurses were female and married. This result was similar to **Mobasher et al.** [17] who conducted a cross sectional study in Iran about nurses' competence and job related factors among nurses in university hospitals, and found that most of nurses were females and married.

Moreover, the present study showed that that the highest percentage of nurses had nursing diploma and were in the age group range between 20 – 30 years old. Half of nurses had less than five years of experience in nursing. In the same line, a study carried out by **Adib and Eshraghi** [18] in Iran about assessing nurses' clinical competence from their own viewpoint and the viewpoint of head nurses, found that most of the studied nurses had diploma and had less than 5 years of work experience. Similarly, **Osman et al.** [19] who studied relationship between nurses' competencies and quality of patient care at intensive care units and reported that the study sample were at age ranges from 20 to less than 30 years with mean ± SD (26.98±4.05).

The current study revealed that near from half of nurses reported that the head nurses had a high level of Leadership competencies, while more than one quarter of nurses reported that the head nurses had a low level of Leadership competencies. From the research investigator point of view, this might be attributed to factors that affected the development of nurse leader competence as work experience, type of nursing environment, educational level achieved, adherence to professionalism, critical thinking, and personal factors. Work experience and education were shown to significantly influence the development of competency of nurses [20].

This result was similar to **Mahdi and Faraj** [21] who conducted a descriptive analytical study in Iraq to evaluate leadership competencies among nurse managers, and found that the highest proportion of studied nurse managers had good level of leadership competencies. Likewise, a study carried out by **Lehtonen et al.** [22] in Island to assess nurse managers' leadership and management competencies assessed by nursing personnel in a Finnish hospital, found that leadership and management competencies were assessed as being quite good by the nursing personnel.

Also, a study conducted by **El-Sayed** [23] in Egypt about core competencies elements among first line nurse managers at Port-Said Governmental Hospitals and reported that nurses assessed the competence level of nurse managers as good. As well, a study conducted by **Warshawsky and Cramer** [24] in Florida about describing nurse manager role preparation and competency and found that nurse managers were rated competent.

On the other hand, these results were against a study performed by **Abd-Elmoghith and Abd-Elhady** [25] in Egypt to assess nurse managers' competencies and its relation to their leadership styles and stated that slightly less than half of nursing managers had a low level of competency. This difference may be related to the frequency of performing managers' activities were low and this because of they were having a higher

responsibility and loaded during the morning shift. However, it might be lack of confidence in their ability and lack self-belief.

In addition, the study result was contradicted with **Ma et al.** [26]who studied competencies of military nurses in general hospitals in China and reported that competencies of military nurse managers in general hospitals is limited. Also, a quantitative study performed by **Paarima et al.** [27]in Ghana about leadership competencies of first-line nurse managers and stated that nurse managers exhibited a moderate level of leadership competencies.

Moreover, **Gunawan et al.** [28] who conducted a study in Indonesia entitled "Comparison of managerial competence of Indonesian first-line nurse managers" and reported that the managerial competence of the studied nurse managers was at a moderate level. In the same context, a cross sectional study performed by **Awad Allah and Salem** [29]in Egypt to evaluate managerial competencies of primary health care managers and stated that more than half of the studied sample had low managerial competency.

Concerning total mean score and levels of leadership competence domains of head nurses as perceived by nurses, the present study clarified that the highest mean score was related to ethical behaviors domains, influencing and motivating and teaming domains, while the lowest mean score was related to developing human capital and communicating domains .This result might be due to the nurse managers received training to help in successfully get experience and knowledge in using management skills and practiced tools during work environment the long term. Ethical competence is a major part of competence that is formed based on an individual development process in society and the structures of personal, educational, and functional values.

The importance of ethics is related to which idea that believes nursing profession was founded on ethics. Moreover, due to the presence of violence, anxiety, job dissatisfaction, distress, and ethical contradictions in the nursing practice, nurses needs high ethical competency. The high ethical competence can help nurses in providing health care with ethical aspects in a stressful hospital environment [30].

Different tools have been used to assess the competence in previous studies. Similarly, in more studies the highest competence has been reported in this domains, a cross sectional descriptive study in Iran carried out by **Mobasher et al.** [17]to investigated nurses' competence and job related factors among nurses in university hospitals and reported that the highest mean score of competence were in domains of 'ethical-legal performance. Consistently, **Gunawan et al.** [28] who conducted a study about managerial competence of first-line nurse managers in public hospitals in Indonesia and reported that all nurses were most competent in maintenance of teaming and in ethical behaviors.

In contrast, **Ochonma et al.** [15] who studied managerial competency among hospital managers in Spain showed that the highest scores of nurses' competence was in "managing situations". In the opposite line, a descriptive cross, sectional study by **Okonkwo et al.** [31]in Nigeria entitled "Managerial Competencies. A Survey of Healthcare Managers in A Tertiary Hospital in Calabar, South Nigeria "reported that the highest competence was reported in learning dimension. Concerning total levels of innovative work behavior domains among nurses as perceived by head nurses, the current study represented that the highest percentage of innovative work behavior dimensions of nurses was related to problem recognition, while the lowest percentage was related to idea application. In the same respect, these findings was in harmony with a study carried out by **Mahgoub** [32]in Egypt

entitled "Relationship between Work Environment and Innovative Behavior among Staff Nurses" and indicated that the highest dimension of innovative behavior perceived by staff nurses was problem recognition dimension, and implementation starting activities dimension came last in ranking between innovative work behavior dimensions, and mentioned that most employees can give great innovative ideas but had no plans for implementation of this ideas and don't take the appropriate measures to put this ideas in action.

Likewise, **Jung and Yoon** [33]**,** whose study was conducted at Republic of Korea about improving frontline service employees' innovative behaviour using conflict management in the hospitality industry, and revealed that the highest mean percentage of staff nurses perception toward innovative work behaviours were related toproblem recognition.

In the same concern, a study carried out by **Bagheri and Akbari**[8] to investigate the impact of entrepreneurial leadership on nurses' innovation behaviour, in Iran, clarified that innovative behaviour is a process of bringing new problem solving and transfer ideas into use. Innovative behaviour in the workplace begins by an employee identifying a work-based problem. This is followed by the development of new ideas and solutions for the problem/s. They added, the final step in the innovative process is to develop support for the new ideas and solutions, so they become embedded within the organization. This may be related to nurses at different care units usually dealing with patients who require complex assessments and interventions this enhance their ability to think critically and introduce innovative solutions.

These results were contradicted with a study conducted by **Abdel Azem et al.** [34] in Egypt to investigate head nurses' leadership effectiveness, communication skills and mindfulness: It's' relation to staff nurses' innovative work behaviour, stated that the highest mean percentage of staff nurses perception toward innovative work behaviours were related to idea championing and idea implementation/ starting activities and declared that this could be referred to the organization and managers support and gives staff a space of freedom for innovation and help them to implement innovative ideas. In addition, a study done by **Kamel and Aref** [35] reported that the highest mean scores of innovative work behaviour were related to idea championing and idea implementation.

Pertaining to correlation between leadership competencies of head nurses and innovative work behaviors scores of nurses, the current study highlighted that there was a positive correlation between leadership competencies score and innovative work behavior scores. As well as the table clarify that there is a positive correlation between innovative work behavior and sustainable development behaviors scores. From the research investigator point of view, the previous study results might be due to that leadership competencies is considered as the important aspect that contributes to the staff nurses' innovative work behaviors and leads to a high level of nurses' creativity and innovation.

Additionally, competent leaders able to motivate staff to perform beyond their expectations by mean of purposeful tasks inspire hard work, share vision and simply express objectives and priorities. As well, encourages the adoption and implementation of new ideas with decentralization. Moreover, they enhance and provide staff with more decision-making autonomy in all actions related to tasks they perform and support new activities that could positively affected staff nurses' innovative work behaviors[36]**.**

This result was in agreement with **AbdEl Muksoud et al.** [37] who mentioned that there was statistically significant and positive correlation between innovative work behaviors and all multifactor leadership behaviors. In the same

concern, a study conducted by **Harlianto and Rudi**[38] in Poland about the role of leaders in stimulating innovative work behavior and its impacts towards job performance, who mentioned that competent leaders can motivate, encourage and identify with their staff to promote the completion of their jobs and the achievement of the required objectives.

Also, the study findings go in the same line with **Ismail and Mydin** [39] who examined how nurse leaders transformational leadership behavior relates to innovative work behaviors of subordinate nurses, in Pakistan, and revealed that leadership competencies has the strongest positive relationship with innovative work behaviors. As well, a study done by **Cummings et al.** [40] in Canada, about the essentials of nursing leadership which supported the study findings and confirmed that effective strong leadership is fundamental to facilitate the sustainable development behavior strength. Competent leadership positively correlates with values to develop nurses and offers a collaborative framework team for increasing creativity and productive sustainable behavior in nursing communities. Similarly, **Sorour and Elkholy** [41] who reported that there was a highly statistically significant positive correlation between competent leadership and its role on staff nurses' creativity and sustainable development behavior.

Also, this result was congruent with **Dikic et al.** [42] who carried out a study in Serbia about alignment of perceived competencies and perceived job tasks among primary care managers, and found that the highest mean score of leadership competencies was reported in communication domains and mentioned that the achievement of any organization depends on the effectiveness of its communication systems and the interaction between employees members, and the primary reason for job discontent is bad communication between managers and employees. From the research

investigator point of view, differences in these findings may be due to the different tools and different conditions and skills of the nurses studied. According to relation between personal characteristics of nurses and their perception regarding leadership competence levels of head nurses, the present study represented that there was statistically significance difference between personal characteristics of nurses and leadership competence levels regarding age, years of experience and educational qualifications. This can be interpreted as older nurses; nurses who have more years of work experience and have higher level of education are more likely to have higher leadership competence scores.

This result coincided with a study conducted by **Warshawsky and Cramer** [24] reported that experience had the strongest association with nurse manager competence, followed by graduate leadership education. Likewise, **Lehtonen et al.** [22] found that nurse manger's competencies were associated with their education level, working experience, and with their education. Conversely, this result disagreed with a study carried out by **Mahdi and Faraj** [21] stated that there were no significant differences have been reported in leadership competencies with regard to nurse managers' age, gender, qualification, and years of experience.

Conclusion:
Results of the current study concluded that, near half of the studied nurses reported that head nurses had a high level of leadership competencies. While, slightly half of head nurses reported that nurses had a high level of innovative work behavior. Additionally, there was a significant and direct association between leadership competencies and innovative work behavior among nurses.

Recommendations:
Based on the findings of this study, the following recommendations can be included:
The nurse manger and authorities should:

- Provide training programs to improve leadership competencies of head nurses.
- Identify strengths and weaknesses of head nurses to promote their leadership competencies
- Improve communication skills of head nurses through training courses about importance and different ways of effective communication channels
- Administer continuous learning about modern and innovative ways of leadership to update and promote leadership competencies of head nurses.
- Identify the facilitators and barriers of leadership competencies of head nurses across positions and unit types.
- Introduce reward programs that motivate nurses to continuously share knowledge to improve the quality of patient care through innovative work behaviors.

The nurse leader should:
- Provide various opportunities and time for education, training programs to promote innovative work behaviors among nurses.
- Encourage and provide support to staff nurses through open communication, problem-solving, and shared decision making.
- React positively to the innovative efforts of production nurses by provide the time and resources to carry out.
- Encourage nurses to develop and to implement creative ideas through collaboration.
- Reduce nurses' resistance to change through communicating the objectives, methods and process of introducing new changes, nursing trends, media and technologies.
- Create a perception of equality among nurses which helps them to engage in
- Sharing their valuable knowledge with their team members and other staff in the organization.
- Conduct workshops on innovative thinking and develop strategies to enhance nurses' level of innovative work behavior.

- Encourage nurses tothink outside the Box tobe open to new ideas without setting limiting beliefs.
- Nursing leaders should focus on the social approach, not just technical aspects
- Encourage nurse's enthusiasm and curiosity and innovation.
- Guiding project management activities.
- Managing teams, and effectively evaluating sustainable performance, as well as communicating effectively with various departments.
- Reduce nurses' resistance to change through communicating the objectives, methods and process of introducing new changes, nursing trends, media and technologies.
- Create a perception of equality among nurses which helps them to engage in
- Sharing their valuable knowledge with their team members and other staff in the organization.
- Conduct workshops on innovative thinking and develop strategies to enhance nurses' level of innovative work behavior.

The staff nurses should:
- Learn how to prioritize work, work proactively, and how to make a difference at work for problem recognition and improve innovative behavior.
- Develop their capabilities and Develop themselves professionally
- Use new technologies, media, information and communication technologies and methods in nursing
- Learn new things at work. And Attend workshops on innovative thinking and apply strategies to elevate their levels of innovative work behavior.
- Improve their skills in problem recognition, idea generation, idea promotion, application and innovative output, and give due care to improving their abilities in idea application.
- **Further research**
  - ✓ The effect of training program about innovative work behavior in nursing on staff nurses'

organizational climate, self-efficacy and job productivity of nurses.

✓ Future longitudinal, experimental and multi-site studies to conduct more research on leadership competencies, nurse's innovative work behavior.

✓ Develop objective tools for leadership competencies and innovative work behaviors.

✓ Develop standards for head nurse's leadership competencies.

Table (1): Personal characteristics of head nurses in the study sample (n=30)

Personal Characteristics	(N=30)	
	No	%
Age in year		
20-30	9	30%
31-<40	11	**36.7%**
40+	10	33.3%
Mean +SD		**37.5±8.3**
Marital status		
Single	6	20%
Married	24	**80%**
Gender		
Female	30	**100%**
Male	**-**	**-**
Experience (years)		
1-<5 years	8	26.7%
5-<10	12	**40%**
>10	10	33.3%
Mean +SD		9.3±8.7
Educational qualification		
PHD degree	1	3.3%
Maser degree	4	13.4%
Bachelor in nursing	15	**50%**
Technical institute of nursing diploma	10	33.3%

Table (2): Personal characteristics of nurses in the study sample (n=240)

Personal Characteristics	(N=240)	
	No	%
Age in year		
20-30	150	62.5%
31-<40	70	29.2%
40+	20	8.3%
Mean +SD	28.4±6.2	
Marital status		
Single	20	8.3%
Married	220	91.7%
Gender		
Female	230	95.8%
Male	10	4.2%
Experience (years)		
<5 years	120	50%
5-10	100	41.7%
More than 10	20	8.3%
Mean +SD	4.3±8.7	
Educational qualification		
Nursing diploma	110	45.8%
Technical institute of nursing diploma	50	20.8.%
Technical institute of health diploma	20	8.4%
Bachelor in nursing	60	25%

Table (3): Mean and standard deviation of nurses regarding head nurses leadership competencies domains

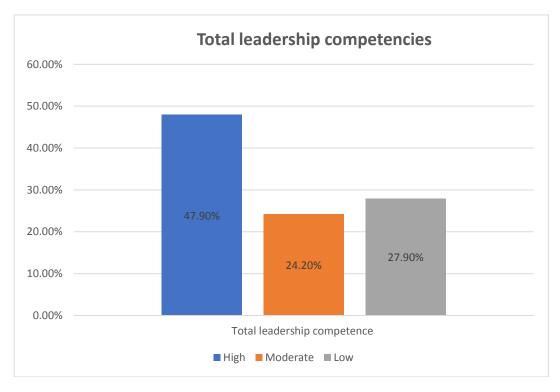| Leadership competencies domains	High		Moderate		Low		Mean±SD
	No	%	No	%	No	%	
Influencing and motivating	146	60.7%	55	22.8%	39	16.5%	19.787±3.045
Learning	113	47.1%	63	26.3%	64	26.6%	15.338±4.046
Managing	136	56.6%	53	22%	51	21.4%	15.906±3.210
Envisioning	95	39.6%	59	24.6%	86	35.8%	14.268±4.100
Teaming	145	60.4%	45	18.8%	50	20.8%	16.963±3.279
Initiating	93	38.7%	65	27.1%	82	34.2%	12.513±3.915
Ethical behaviors	165	68.8%	55	22.9%	20	8.3%	21.106±2.489
Developing human capital	82	34.2%	51	21.2%	107	44.6%	10.302±2.041
Communicating	88	36.7%	63	26.2%	89	37.1%	11.542±4.312
Decision making	94	39.2%	66	27.5%	80	33.3%	12.723±3.024
Changing	111	46.2%	57	23.8%	72	30%	14.931±4.221
Total	115	47.9%	58	24.2%	67	27.9%	16.723±2.622

Figure (1) Total levels of leadership competencies of head nurses as perceived by nurses

Table (4): Mean and standard deviation of nurses regarding nurses Innovative work behavior domains (n=30)

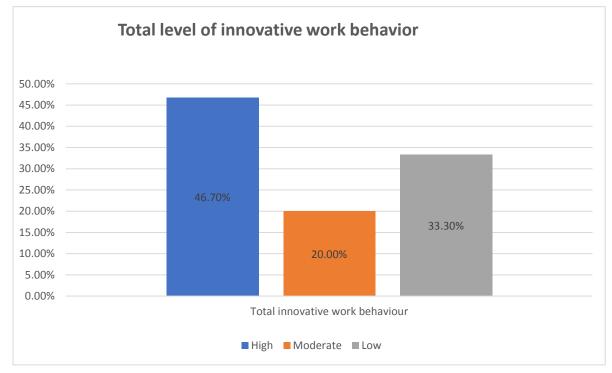| Innovative work behavior domains	Levels						Mean ±SD
	High		Moderate		Low		
	No	%	No	%	No	%	
Problem recognition	19	63.4%	4	13.3%	7	23.3%	17.12±4.234
Idea generation	14	46.7%	7	23.3%	9	30%	14.876±5.165
Idea promotion	16	53.3%	5	16.7%	9	30%	11.242±2.112
Idea application	12	40%	3	10%	15	50%	10.423±3.814
Innovative output	13	43.3%	9	30%	8	26.7%	13.234±2.715
Total Innovative work behavior	14	46.7%	6	20%	10	33.3%	12.311±6.033

Figure (2): Total level of Innovative work behavior of nurses as perceived by head nurses.

Table (5): Relation between personal characteristics of nurses and their perception regarding leadership competencies levels of head nurses (n=240)

Personal characteristics	leadership competence levels						Number	X^2	P
	High		Moderate		Low				
	no	%	no	%	no	%			
Age per years									
20-30	5	3.3	15	10	130	86.7	150		
31-<40	6	8.6	14	20	50	71.4	70	$X^2=$ 5.32*	0.032
40+	-	-	10	50	10	50	20		
Marital status									
Single	-	-	2	10	18	90	20	$X^2=$ 4.42	0.212
Married	10	4.5	30	13.6	180	81.8	220		
Gender	.	.	.	.	.	.	.		
Males	2	20			8	80	10	$X^2=$ 4.52	0.34
Females	20	8.7			210	91.3	230		
Years of experience									
1_<5 years	30	25	5	4.2	85	70.8	120	$X^2=$ 0.804*	0.023
5-<10	15	15			85	85	100		
More than 10					20	100	20		
Educational qualification									
Nursing diploma	11	10			99	90	110		
Technical institute of nursing diploma	17	34			33	66	50	$X^2=$ 3.2*	0.015
Technical institute of health diploma	8	40			12	60	20		
Bachelor in nursing	9	15			51	85	60		

x2 Chi square test   *Significant P value <0.05 *Non Significant P value >0.05

Table (6): Relation between personal characteristics of head nurses and their perception regarding nurses Innovative work behavior levels of nurses (n=30)

Personal characteristics	Innovative work behavior levels						number	χ^2	P
	High		Moderate		Low				
	no	%	no	%	no	%			
Age per years									
20-30	-	-	6	66.7	3	33.3	9	$\chi^2$5.32	0.043
31-<40	1	9.1	7	63.6	3	27.3	11		
40+	2	20	6	60	2	20	10		
Marital status								χ^2	
Single			5	83.3	1	16.7	6		
Married	2	8.3	18	75	4	16.7	24	4.42	0.212
Gender								χ^2	
Males	-	-	-	-	-	-	-	4.52	0.34
Females	4	13.3	20	66.7	6	20	30		
Years of experience								χ^2	
1-<5 years	-	-	3	37.5	5	62.5	8	0.804*	0.021
5-<10	-	-	8	66.7	4	33.3	12		
More than 10	1	10	7	70	2	20	10		
Educational qualification								χ^2	
PHD degree	1	100	-	-	-	-	1	3.2*	0.013
Master degree	-	-	1	25	3	75	4		
Bachelor in nursing	-	-	15	100	-	-	15		
Technical institute of nursing diploma	3	30	6	60	1	10	10		
x2 chi square test *significant P value <0.05 *non significant P value>0.05									

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