Head Nurses' Leadership Behavior and its Influence on Staff Nurses' Innovative Behavior

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Abstract

Background: Leaders of organizations are battling to improve workers' innovative work practices and to establish a conducive work environment for innovation. **Aim of the Study**: Investigating the influence of head nurses' leadership behavior on staff nurses' innovative behavior **Design:** A cross-sectional analytic research design was used. **Subjects and Methods: Setting:** The study was conducted at Om El Masryeen general Hospital that affiliated to the Ministry of Health and Population and located in Giza governorate. **Size:** the subjects composed of two groups; 42 head nurses and (140) staff nurses. **Tools of data collection:** Two different tools, one for the head, assistants &staff nurses'(perception of multifactor Leadership behavior questionnaire), and innovtive work behavior questionnaire)for staff nurses. **Results:** Studied head nurses and staff nurses had Transformational Inspirational Motivation (95.2%, 100%) respectively. 97.6% the heads perceived having contingent reward transactional while 90.7% of the staff nurses perceived transactional Management by Exception. Also, innovative activities of the studied head nurse and perceived ones by staff nurses included having new ideas for improvement (73.8% & 34.3). **Conclusion:** A statistically significant association between head nurses' leadership outcomes, leadership behavior except their active and passive Management by Exception and Laissez-Faire leadership behavior and staff nurses' perception of ' innovative total behaviors and **Recommendation**: A collaborative approach is needed to employ the most effective leadership behaviors to foster and encourage innovation and include innovation-related training opportunities in nursing.

Keywords: Leadership Behavior, Innovative Behavior.

Introduction

Leadership is the process of influencing a group of people by a person in order to achieve a common goal (***Imam & Zaheer 2021***). Leaders may have a variety of leadership behaviors to inspire and motivate their staff or followers. These behaviors are generally categorized into {transformational, transactional, and laissez-faire leadership behaviors (***Ko and Kang, 2019***).

The transformational leadership behavior encompasses four main dimensions. These are moral modeling, charisma, articulate vision, and individualized consideration (***Berkovich & Eyal, 2021***). Leaders with idealized influence and charisma are adherent to important values and principles while taking into account the major requirements of followers. Those with clear vision and motivational inspiration convey organizational goals to followers in an appealing way (***Pardo, 2021***).

Meanwhile, transactional leadership is based on an exchange relationship between the leader and the followers, both encouraged to meet their own needs. It has two main dimensions. The first is contingent reward, and it refers to illuminating the tasks and roles, and supplying followers with various types of rewards upon fulfillment of such duties. The second dimension is active management by exception, whereby the leader closely monitors followers' work to take prompt action in case errors occur (***Poels et al., 2020***).

laissez-faire leadership behavior is mainly passive, and the behaviors most associated with it are establishing the criteria for rewarding followers and maintaining status quo (***Sims et al., 2021***). Followers often have short-term goals, and they consider their work as transactional. Transactional leaders use reward

and punishments, accept the goals, structure, and culture of organizations, and tend to solve problems using conventional approaches (*Andrej et al., 2022).*

The term "innovative behavior"

Innovative work behavior refers to employees' comportment geared towards generating, introducing and/or applying new concepts, products or procedures appropriately for the benefit of the work unit (***Imam and Zaheer, 2021)***.

Nurses play important roles in all health care access points from hospitals and physicians' offices to community health centers, school health clinics, nursing homes, and public health departments. Since roles in patient care across the health system provide significant opportunities to affect health outcomes, nurses at all levels need to open up to new ways of thinking and working to have the confidence and skills to create new ideas and nursing interventions to work on specific issues beyond typical responsibilities (***Mackavey & Cron, 2019).***

Significance of the study

Nurses provide up to 80% of the main care roles in the healthcare scheme and are thus well-positioned to contribute to the area of innovative practice. Nursing innovation not only contributes to enhancing the quality of healthcare but also facilitates productivity thus playing critical roles in healthcare innovation. Therefore, encouraging innovative work behavior among nurses has been an important development direction for healthcare organizations. So, this proposed study is an attempt to elucidate the role head nurses' leadership in improving staff nurses' innovative work behavior.

Aim of the study

This study aimed to investigate the influence of head nurses' leadership behavior on staff nurses' innovative behavior.

Research Question:

What is the influence of head nurses' leadership behavior on staff nurses' innovative behavior?

SUBJECTS AND METHODS

Subjects and methods of this study were portrayed under four main topics as follows:

I. Technical design

II.   Operational design

III.   Administrative design

IV.   Statistical design

I. Technical Design

The technical design for this study Include research design, setting, subjects and tools of data collection.

1) Research Design:

A cross-sectional analytic research design was utilized in this study.

2) Research Setting:

This study was conducted at Om El Masryeen general Hospital that affiliated to the Ministry of Health and Population and is located in Giza governorate.

3) Subjects of the study:

The subject of this study population consisted of head nurses,their assistants and staff nurses working in the setting at the time of data collection.

Sample Size:

The study sample consisted of two groups; first group namely head nurses&their assistants (42)and second group namely staff nurse(126) staff nurses whom increased to 140 to compensate any dropout rate of around 10%) with only inclusion criterion of being at work with the respective staff nurses for at least six months.

4) Tools of data collection:

Data of this study were collected through two different self-administered questionnaire sheets, one for the head nurses and the other for staff nurses:y

Tool (1): Multifactor Leadership Behavior Questionnaire(appendixI) (head nurses form)

The tool is written in Arabic language and includes three parts:

Part 1: Head nurses` personal characteristics as: Age, gender, marital status, nursing qualification and years of experience. In addition to certain job characteristics as department, work shifts, overtime, ideas and involvement in work improvement, attendance of training courses &number of courses attendance.

Part 2: Multifactor leadership behavior Questionnaire ((head nurse`s form) that developed by (***Bass & Avolio, 1990)*** and adopted from *(**Mohamed, 2016)*** which aims to assess head nurses' self-perception of own leadership behavior. It includes 45 items grouped in seven dimensions.

Four of these dimensions are representing transformational leadership behavior (idealized influence, inspirational motivation, intellectual stimulation, and individual consideration); two dimensions represent transactional leadership (contingent reward and management-by-exception); and one last dimension for the laissez-faire leadership behavior

. **Part** 3*Multifactor Leadership Behavior* Questionnaire

(staff nurses form) that written in Arabic language. It included two parts *the same as head nurses form* except for asking about head nurse rather than self.

Scoring system:

The response to each item is on a five-point Likert scale ranging from (0) Not at all; (1) in a while; (2) Sometimes; (3) Fairly often; (4) Frequently if not always. A higher score indicated higher perception of each type of leadership behavior (frequently if not always 4).

*Tool II***:** *Modified Innovative Work Behavior Questionnaire***:** This tool was developed by *De Jong (2007)* and adopted from *(Ahmed et al., 2019)* that aimed to assess innovative work behavior among staff nurses. It consisted of 47 items categorized into 10 dimensions as following: Innovative role modeling (4 items), support for innovation (12 items), stimulating knowledge diffusion (7 items), providing vision (5 items), consulting (5 items), task assignment and delegation (3 items), organizing feedback (2 items), rewarding (3 items), providing resources (3 items), and monitoring (3items).

Scoring system:

The responses were on a five-point Likert scale ranging from Strongly disagree(1) disagree(2) Uncertain(3) Agree(4) to "Strongly disagree" (5). A higher score indicated more innovative work behavior.

II.   Operational design:

The operational design for this study contains three phases namely: the preparatory phase, validity and reliability, pilot study, and fieldwork.

1-The Preparatory phase:

This phase consumed 4 weeks started at beginning of January 2022 and was completed on February 2022, the researcher reviewed using articles, the internet, scientific journals, the material in textbooks, the national and international related literature were used in the study to be acquainted with study subjects. During this phase, the researcher also visited the selected places to get acquainted with the personnel and the study settings.

2-Validity and reliability of tool

The tools used in data collection are standardized with reported validity and reliability *(Ahmed et al., 2019).* Nonetheless to achieve the criteria of trust and worthiness of the tools of data collection in the study, the opinions of a jury group consisting of professors from nursing administration departments was sought for tools relevance and clarity.

Reliability for tools was applied by the researcher for testing the internal consistency of the tools by administrating of the same tool to the same subjects under similar condition. Internal consistency reliability of all items of the tools was assessed using Cronbach's alpha coefficient, proved to be high as indicated in the following table:

Reliability Statistics

	No. of Items	**Cronbach's Alpha**
Innovative behavior scale	**47**	**0.957**
Leadership scale (head)	**45**	**0.709**
Leadership scale (staff)	**45**	**0.89**

3-Pilot study:

A pilot study was conducted on 10% of the study sample aiming to test the clarity and applicability of the data collection forms and to estimate the time needed for filling them in. Necessary modifications was done according to the results of the pilot study. The pilot has also served to estimate the time needed for each subject to fill in the questions and to identify the problems that may be encountered during the study.

4-Field work:

The actual fieldwork for the process of the data collection consumed 6 weeks started at beginning of March 2022 and was completed on June 2022. The researcher collected the data

from the study subjects at 2 days (Sunday and Thursday) / week at morning (10a.m-12p.m). The researcher met with a number of subjects ranging from 10-15 head and staff nurses in each meeting.

After securing the official permission from the dean of Ain-sham faculty of nursing to the director of Om El Masryeen general Hospital. The researcher met the medical and nursing directors of the hospital to determine the suitable time to collect data.

The researcher introduced himself to the head and staff nurses then explained the aim of the study to each one of them. Oral consent was obtained from every participant. The researcher handed the forms to the study participants to fill them, and the researcher checked for their completeness, the average time needed to fill the questionnaire was around 10-20 minutes.

5-Ethical considerations:

An ethical approval was obtained from the Nursing Research Ethics Committee in the Faculty of Nursing, Ain Shams University. The researcher met with the study subjects individually to explain the purpose of the study and to obtain their verbal informed consent to participate. They was reassured about the anonymity of any obtained information, and that it would be used only for the purpose of scientific research.

III. Administrative design

After securing the official permission from the dean of the Faculty of Nursing, Ain Shams University to the hospital medical and nursing directors to get their permission to conduct the study. The purpose of the study and its procedures was explained to them to get their agreement and cooperation.

IV. Statistical design:

Data entry and statistical analysis was done using SPSS 20.0 statistical software package. Quantitative continuous data was compared using Student t-test in case of comparisons between two groups. For multiple group comparisons of quantitative data, one-way analysis of variance test (ANOVA) was used. Categorical variables was compared using chi-square or Fisher exact tests as suitable. Statistical significance was considered at p-value <0.05.

Results

Table (1): The study sample included (42) head nurses whose age ranged between (27-57) years , with median(40.5) years as illustrated in table (1). The majority were female & married.(85.7%),mean while) the study sample included (140) staff nurse whose age ranged between (19-58) years, with median(29) years as illustrated in table 15, the majority were female (77.9%), married (71.4%), diploma (78.6%),   Regarding work shifts (85.7%) of them had work shifts and (78.6%) of them attended training courses .

Table (2) demonstrates head nurses' leadership behaviors as perceived by head and staff nurses. The head and staff nurses perceived having Inspirational Motivation (95.2%& 100%) and intellectual stimulation (78.6%& 72.1%) respectively. moreover, 97.6% the head nurses perceived having contingent reward while 90.7% of the staff nurses perceived Management by Exception. regarding perception of passive avoidance 78.6% of the head and staff nurses reported passive avoidance Laissez-Faire behavior Concerning

outcomes, 83.3% of the head nurses reported extra-effort outcome while 77.1% of the staff nurses reported extra-effort, effectiveness and satisfaction outcomes. Additionally (71.2%&52.9%) of the head and staff nurses had transformational head nurse leadership behavior respectively.

Table (3) presents innovative activities of the studied head nurse and perceived ones by staff nurses, (73.8% & 34.3%) of them reported having new ideas for improvement, (59.5%& 23.6%) reported presenting these ideas to superiors, (69%& 30%) reported discussing these ideas with peers and (59.5%&26.4%) reported being encouraged to apply these ideas respectively. Regarding source of information, they reported internet (54.8% &51.4%), textbooks (73.8% &42.9%), physician rounds (42.9%& 40.7%) and other sources (38.1%& 63.6%) respectively.

Table (4) illustrates a statistically significant correlation between the studied subjects` perception of leadership behavior and their outcomes. And so, t is a positive correlation between head nurses' Innovative

behavior score and perception of their transformational leadership (r=.436), Extra-effort outcomes (r=.771), effectiveness outcome (r=.781) and satisfaction outcomes (r=.594). Additionally, there is positive correlation between staff nurses' perception of their head nurses' leadership Innovative behavior score and their transformational leadership (r=.403), transactional leadership (r=.585), Extra-effort outcomes (r=.636), effectiveness outcome (r=.646) and satisfaction outcomes (r=.467).

Table (1): Personal characteristics of head and staff nurses in the study sample

Personal information	Head nurses no. 42		Staff nurses no. 140	
	N	%	N	%
Age:				
<30	0	0	72	51.4
30-	18	42.9	36	25.7
40+	24	57.1	32	22.9
Range	27-57		19-58	
Mean±SD	41.6±9.1		32.5±9.0	
Median	40.5		29.0	
Gender				
Male	6	14.3	31	22.1
Female	36	85.7	109	77.9
Marital status:				
Unmarried	6	14.3	39	27.9
Married	36	85.7	100	71.4
Widow	0	0	1	0.7
Nursing qualification:				
Diploma	26	61.9	110	78.6
Bachelor	16	38.1	30	21.4
Experience years totals :				
<10			73	52.1
10-	20	47.6	37	26.4
20+	22	52.4	30	21.4
Range	1-42		<1-37	
Mean±SD	20.1±11.1		11.8±9.4	
Median	20.00		8.5	
Shifts:				
Morning	9	21.4	20	14.3
Afternoon	5	11.9	18	12.9
Night	0	0	3	2.1
Morning and afternoon	8	19.0	23	16.4
Morning and night	1	2.4	4	2.9
Afternoon and night	1	2.4	4	2.9
All three shifts	18	42.9	68	48.6
Work shifts:				
No	9	21.4	20	14.3
Yes	33	78.6	120	85.7
Attended training courses:				
No	13	31.0	30	21.4
Yes	29	69.0	110	78.6
No. of courses attended:				
Range	0- 1		0- 1	
Mean±SD	0.7±0.5		0.8±0.4	
Median	1.0		1.0	

Table 2: Leadership behavior as perceived by head nurses and staff nurses in the study sample

	Head nurses no. 42		Staff nurses no. 140	
	Frequency	**Percent**	**Frequency**	**Percent**
High (>95th percentile):				
Transformational:				
Idealized Behaviors	37	88.1	88	62.9
Idealized Influence	23	5 4 .8	107	76.4
Inspirational Motivation	40	9 5 .2	110	78.6
Intellectual Stimulation	42	100.0	101	72.1
Individual Consideration	34	81.0	87	62.1
Transactional:				
Contingent Reward	41	97.6	106	75.7
Management by Exception (Active)	39	92.9	127	90.7
Passive Avoidant:				
Management by Exception (Passive)	12	28.6	109	77.9
Laissez-Faire	33	78.6	110	78.6
Outcomes:				
Extra-effort	35	83.3	108	77.1
Effectiveness	34	81.0	108	77.1
Satisfaction	26	61.9	108	77.1
Predominant leadership behavior:				
Laissez faire	0	0	16	11.4
Transactional	12	28.6	50	35.7
Transformational	30	71.4	74	52.9

Table 3: Innovative activities and sources of information as reported by head and staff nurses

	Head nurses no. 42		Staff nurses no. 140	
	Frequency	**Percent**	**Frequency**	**Percent**
Have new ideas for improvement	31	73.8	48	34.3 23.6
Presented these ideas to superiors	25	59.5	33	30.0 26.4
Discussed these ideas with peers	29	69.0	42	19.3
Was encouraged to apply these ideas	25	59.5	37	
Participated in hospital improvement projects/ Shared in applying new ideas to improve nursing performance	17	40.5	27	
Sources of information: @				
Textbooks	31	73.8	60	42.9 40.7
Physician rounds	18	42.9	57	20.0
Reading research	16	38.1	28	0
Nursing rounds	26	61.9	0	51.4 63.6
Internet	23	54.8	72	
Other	16	38.1	89	
No. of sources:				
Range	1-6		1-5	
Mean±SD	3.1±1.4		2.2±1.3	
Median	3.0		2.0	

(@) Not mutually exclusive

Table 4: Correlations between the studied subjects perception regarding leadership behavior and their innovative behaviors

	Spearman's rank correlation coefficient	
	Innovative behavior score	
	With head nurses perception of their leadership	With staff nurses' perception of their head nurses' leadership
Leadership behaviors:		
Transformational	.436*	.403**
Transactional	.402	.585**
Laissez-faire	-.166	.002
Outcomes:		
Extra-effort	.771**	.636**
Effectiveness	.781**	.634**
Satisfaction	.594**	.467**

Discussion

Leadership behaviors play an important role in creating a positive work environment, enhancing job satisfaction, innovation and commitment. As well, Innovative work behavior can be seen as a motivational and cognitive process of the individual nurse or a group of nurses, expressed in certain activities *(Abd El Muksoud et al., 2022).*

The results of the present study revealed that more than half of the studied head nurses aged more than forty years and more than half of the studied staff nurses aged less than thirty years. The majority of the head nurses were females and married while More than three quarter of the staff nurse were females and less than quarter of them were married.

Concerning qualifications, around two third of the head nurse had diploma and the majority of the staff nurses had diploma. As regard experience years, more than half of the head nurse had more than twenty years of experience and more than half of the staff nurses had less than ten years of experience

In addition, the majority of the head nurses and staff nurses had work shift and less than half of them worked the three shifts. Moreover, the majority of staff nurses and more than two third of head nurses reported attending training courses.

Similarly, the results of *(Abd El Muksoud et al., 2022)* stated that the mean age of the studied nurses was 30.8±6. As well, the majorities of them were female and married. About two-thirds of the study subjects worked in ICU and emergency units. Moreover, the majority of staff nurses attended training courses. While as regards nurses educational level, less than half of them had bachelor degree

nursing. Additionally, more than half of them had less than 10 years of experience. As regard head nurses` leadership behavior, the current study results demonstrates that all the studied head nurses perceived having intellectual transformational stimulation followed by the vast majority of them perceived having contingent reward transaction and around three quarter of them reported having transformational leadership behavior then more than half of them perceived having idealized transformational influence. As reguard this indicates that transformational leadership improves client care by increasing staff nurses' motivation

Regarding perception of passive avoidance only around one quarter of them reported management by exception. This result could be due to availability of managerial support, job certainty, or presence of participation in decision-making. This finding could be related to the fact that transformational leadership is preferred over transactional leadership because it encourages nurses to improve their knowledge and skills in making sound decisions while also assisting them in developing leadership traits.

In the same line*, (Gashaye et al., 2023)* result infers that nurses perceived that their head nurses were using a transformational leadership behavior more often than transactional and laissez- faire leadership behaviors. the analysis showed that nurses' perception of their leaders' utilization of leadership behavior according to the three leadership behaviors is as follows: the head nurses fairly often or commonly used the transformational leadership behavior, they used transactional leadership behavior sometimes and they used laissez-faire leadership behavior

once in a while. Moreover, the analysis showed that nurses indicated that their head nurses had used all domains of transformational leadership behavior equally and domains of transactional leadership behavior in a variable way, ranging from fairly often to sometimes. Among the transformational leadership behaviors, inspirational motivation and idealized influence behavior had highest mean scores. The head nurses had fairly often used a contingent reward leadership behavior, while they sometimes used active and passive management by exception.

This result explained by transformational leadership make employees feel trust, admiration, loyalty, and respect for leaders, and they are motivated to do more than usual. The transformational leadership model produces a lot of change significantly by emphasizing on a higher level of intrinsic motivation, trust, commitment, and loyalty from subordinates The hospital needs to pay attention to managerial support and increase leadership roles because the characteristics that exist in the idealistic or charisma influence can build trust, admiration, respect, and trust. This is necessary so that nurses are not opposed and try to comply with new policies in nursing management. Then, a leader communicates high expectations to employees and inspires through motivation to achieve organizational goals, so intellectual stimulation can also encourage innovation in staff, maintain trust, leadership, and improve service quality *(Rindu et al., 2020).*

Similar with the current study results, *(Bush et al., 2021)* demonstrated that the majority of the leadership behaviors aligned with that of Transformational; Idealized Attributes, Idealized Behaviors, Inspirational Motivation, Intellectual Stimulation, Individual Consideration, followed by Transactional Contingent Reward, Monitors Deviations and Mistakes and Passive Avoidant. The items with the 3 highest average ratings within the Transformational leadership behavior scale were in the areas of coaching and developing people, treating others as individuals, acting with integrity, and building trust. The items with the 3 lowest average ratings for Transformational leadership behavior were in the areas of acting with integrity, encouraging others, and building trust.

These results agreed with those of *Şahin and Özgenel, (2020),* who discovered that transformational leadership behavior insights are at the top of the scale, laissez-faire leadership behavior insights are at the bottom, and transactional leadership behavior insights are in the middle.

Disagreed with the current results, *Hassan Helaly et al., (2022)* study results showed that the vast majority and the majority of the head nurses had a moderate level of transformational, laissez-faire, and transactional leadership, respectively. Moreover, *(Rindu et al., 2020)* results presented that transformational leadership in the medium category. Additionally, *Zakaria and Abo Habeb, (2019)* also showed that the nurses working in the Mansoura Health Insurance Hospital had a moderate level of transformational, transactional, and laissez-faire leadership behaviors.

While, regarding perceived head nurses' leadership behaviors by staff nurses. The current results shows that around three quarter staff nurses reported having idealized transformational influence, Inspirational transformational Motivation and intellectual transformational stimulation. Moreover, the vast majority of them reported having transactional Management by Exception while, more than half of them perceived having transformational predominant head nurse leadership behavior. The results indicated that the nurses perceived that their superiors were using a transformational leadership behavior more often than the transactional or laissez-faire leadership behaviors.

The current result could be due to transformational leadership depending on the interactive relationship in which the leaders and the followers help each other to elevate a higher level of morale value and motivation. . This effect is evidenced when leaders are more concerned with change and development of their followers' personal and professional roles by portraying four behaviors witch feet directly by subordinate.

As reguard these findings, it might be due to that staff nurses choose to work with a leader using this behavior of leadership behaviors that includes pure vision, commitment to excellence, loyal to their staff

nurses, willingness to inspire, communicate, and lead others to greater accomplishment. They also foster innovation and stress the value of appreciating and valuing staff nurses. These will push new standards of service and sustainability to high quality performance, safer working conditions for nurses, and secure patient-centered care. Therefore, it was recommended that a mix of transactional and transformational leadership behaviors should be adopted, but with careful consideration of the circumstances and nature of the responsibilities delegated to employees and followers.

In contrast with the current study results, *Hassan Helaly et al., (2022)* shows the mean scores of the dimensions of leadership behaviors as perceived by the staff nurses under study. The results reveals that the highest mean score was related to transformational leadership behavior, followed by the mean scores of transactional leadership behavior and leadership outcomes.

The current study finding also shows agreement with previous studies, such as the study conducted by *(Abd El Muksoud et al., 2022)* who showed that the highest percentage of staff nurses had a positive perception of the transformational leadership behavior, *(Olu-Abiodun &Abiodun, 2017)* who studied the perception of transformational leadership behavior among nurses, in Nigeria; and another one conducted by *(Majeed, et al 2017)*, who explored the relationship between transformational leadership and organizational citizenship behavior, in Malaysia, and they found that nurses had a positive perception about transformational leadership behavior.

Along with current study findings, *(Albagawi, 2019)* displays the mean responses of the leadership behaviors of the nurse managers, as perceived by the staff nurses. The analysis indicated that the staff nurses' perceptions of their nurse managers' leadership behaviors were as follows. The nurse managers 'fairly often' used a transformational leadership behavior, 'sometimes' used a transactional leadership behavior and 'once in a while' used a laissez-faire leadership behavior. In terms of transformational leadership, the results indicated that the nurse managers fairly often influenced their subordinates through employing all five critical strategies of

transformational leadership: attributed idealized influence, behavioral idealized influence, inspirational motivation, intellectual stimulation and individualized consideration. As perceived by the staff nurses, the results implied that the nurse managers consistently employed transformational leadership when managing their staff.

As well, *(Afsar& Masood, 2018)* who investigated the effect of transformational leadership on employee's innovative work behaviors, in Pakistan, and revealed that nurses had a positive perception about transformational leadership behavior. Moreover, *Ahmed et al., (2019)* illustrates nurses' perception of the multifactor leadership behaviors domains. The majority of nurses had a positive perception of the transformational leadership behavior.

Also the current study results demonstrated that the majority of the studied nurses perceived that their head nurses had passive avoidance Laissez-Faire behavior. As reguard , these results might be due to that this hospital had a centralized decision making process that could affect negatively on older and more experienced nurses.

In contrast, *(Abd El Muksoud et al., 2022)* results revealed that more than three quarter of the studied nurses had negative perceptions of laissez-faire leadership behavior. Also *Ahmed et al., (2019)* stated that around one third of the studied nurses had negative perceptions of transactional leadership and laissez-faire leadership behaviors, respectively. Also *Hassan Helaly et al., (2022)* stated that the lowest mean score of leadership behaviors as perceived by the staff nurses was related to laissez-faire leadership behavior.

Concerning innovative activities of the studied head nurses, the current study revealed that about three quarter of them have new ideas for improvement , more than half of them presented these ideas to superiors and discussed it with peers and participated in hospital improvement projects while, more than two third of them was encouraged to apply these ideas. While, Regarding Innovative head nurses' behaviors as perceived by staff nurse, the current study results presents that around one third of them reported having new ideas for

improvement, discussing these ideas with peers and being encouraged to apply these ideas.

these results might be due to the long time experience the head nurses had that may have an effect on their ability to create new ideas. And the difference in the head nurse perception and staff nurse perception of innovative behavior may be due to that any person usually try to discuss his/ her own new ideas with the higher authorities seeking for their support for implementation then discuss them with subordinate.

Additionally, around two third of the studied staff nurses have high total perception of innovative behavior of head nurse and around three quarter have high perception of Innovative role modeling, support for innovation, stimulating knowledge diffusion, providing vision, consulting, task assignment and delegation and the majority had organizing feedback. The potential explanation for this result may be attributed to the fact that the innovation behavior is comparatively new and some while become a familiar concept for nurse managers; so they became interested in enhancing these behaviors in their units.

As regaurd innovative behavior , it could be explained in the light of the nature of the healthcare work environment, as well as, daily nursing activities and stressful situations that require quick solutions make staff nurses feel a sense of creating solutions for work pressure. Additionally, staff nurses use their energy all the time for achieving their daily routine work, duties, and responsibilities. Therefore, they do effort and energy to think creatively in their work to achieve their goals. Allocating a proper amount of time for creativity is a complicated task since a too-tight schedule or impossible deadline act as a barrier for creativity, while reasonable time pressure nourishes creative ideas. In addition, interaction with their colleagues which directly influences their level of perceived creativity. Furthermore, they perceive creativity as a motivating role behavior, this encourages them to engage in creative and innovative behaviors.

In harmony with the current study results, *(Kemer & Yildiz, 2023)* study results cleared that according to the evaluations of the nurses, the innovative leadership of the managers mean was high. In the same direction,

(Shama & Ahmad, 2021) results revealed that regarding agreement upon innovative behavior the majority of the studied participants' had positive innovative behavior while few of them had negative innovative behavior. The highest agreement of the studied participants upon the dimensions of nurses' support for innovation, nurses' vision, monitoring and work communication.

Similar with the current study results, *(Alrefaei et al., 2022)* results showed that the highest mean score was in the "idea search" domain, while the lowest was in the "implementation of starting activities" domain. The overall mean score of the innovative behavior (IB) questionnaire was at a moderate level of agreement on IB.

Moreover in similar with the current study findings, *(Kassem & Ahmed, 2021).* Results demonstrated that regarding level of managerial innovation was highly at main university hospital than Elmahala Chest Hospital. Agreement of managerial innovation was higher at main university hospital than at Elmahala Chest Hospital. Also related to item of new ideas and ways are always good and are welcomed and managing innovatively creates long lasting advantages for the organization at Main University hospital than at Elmahla chest hospital (** p ≤0.01). Also there significance difference to managing innovatively creates long lasting advantages for the organization at main university hospital than at Elmahla chest hospital (*p< 0.05).

Conversely, *(Abd El Muksoud et al., 2022)* results presents that more than third of staff nurses had a high level of innovative work behaviors, while, more than third of them had a low level of innovative work behaviors. Also, *(Yan et al., 2020)* descriptive analysis showed that the nurses' innovation behavior was at a medium level with idea generation, support obtaining and idea realization.

Furthermore study conducted by *(Ahmed et al., 2019)* , who examined the relationship between leadership behaviors, organizational climate, work and innovative behaviors among nurses, in Egypt, and revealed that slightly less than half of them have a high average level of innovative work behaviors. Also, *Ahmed et al., (2019)* clears that clear less thgan half of nurses had a high level of innovative work behavior

On the other hand, *(Li et al., 2022)* demonstrated that nurses' innovation behavior was in the middle level, which was higher than that of Chinese nurses surveyed by other scholars *(Yan et al., 2020).* The different results with the current study results could be because this study focused on the innovation behavior of nurses adopting medical artificial intelligent, which involved high job demands and high risk encouraging nurses to innovate.

Incongruent with the current study results, *(El-seidy et al., 2021)* study results illustrated that slightly more than one -half of the studied staff nurses perceived low level of creativity. This difference may be because of the difference in the education level between the studied groups

Additionally on the other side from the current results, *(Harby et al., 2021)* study results showed disharmony with the current study results. The results revealed that through assessing the nurse manager innovative work behavior skills revealed that a very low level pre-program implementation. This result might be innovation behavior is quite a novel and unfamiliar concept in nursing field.

Concerning head nurses leadership outcomes, the current study results shows that that majority of the studied head nurse had effectiveness and extra-effort outcome and around two third of them had satisfaction outcome of their leadership behavior. Also the results shows that, more than three quarter of the studied staff nurse had effectiveness, extra-effort and satisfaction outcomes of their head leadership behavior. This result may be related to the attainment of organizational outcomes, objectives, goals, and subordinates' requirements in their job.

This result showed agreement with *Hassan Helaly et al., (2022)* who presents that the vast majority of the staff nurses under study had a moderate level of leadership outcomes, whereas few of them had a low level of leadership outcomes and agrees with that of *Zakaria& Abo Habeb, (2019),* who found that effectiveness had the highest mean score, followed by extra effort, and satisfaction had the lowest mean score. Additionally, according to *Bush et al., (2021),* among nurse leaders at a regional medical center in the United States, the satisfaction of leadership had the highest mean

frequency score followed by perceived leadership effectiveness and generating extra effort among staff.

Concerning staff nurses' perception of head nurses' leadership behaviors relation with their reported innovative behaviors, the current study results shows a significant statistical association between staff nurses' perception of head nurses' leadership behaviors with their reported innovative behaviors. As reguard this result may be due to leadership behaviors 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., 2019).*

Since the concept of innovation was put forward and emphasized the significance, innovation has been focused on from researchers in all areas of life. Head nurses' innovative behavior is crucial for improving the full quality of nursing service, as well as the efficiency and competitiveness of nursing.

Thus the previous study result might be due to that leadership behaviors consider the important aspect that contributes to the staff nurses' innovative work behaviors. Additionally, leaders of transformational leadership behavior 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.

In congruent with this finding, *Gashaye et al., (2023)* showed that nurses' innovative work behavior was significantly associated with perceived utilization of leadership behavior. Moreover, *(Abd El Muksoud et al., 2022)* stated that there was statistically significant and moderate positive correlation between

innovative work behaviors and all multifactor leadership behaviors.

In agreement with the current results, *Abd El Muksoud et al., (2021)* stated that there was statistically significant and positive correlation between innovative work behaviors and all multifactor leadership behaviors. Transformational leadership behavior is reasonable for 53% of the variation in nurses' innovative work behaviors (R 2 =53%). As a result transformational leadership behavior is statistically significant positive predictors of staff nurses' innovative work behaviors.

Moreover in the same direction, *(Wang et al., 2019)* demonstrated that according to correlation analysis, the results found that the inclusive leadership of head nurses was significantly and positively correlated to innovative behavior. Furthermore, *(Yang et al., 2019)* results showed that humble leadership had a low positive correlation with innovative behaviour.

Also, *Ismail& Mydin (2018),* who examined how nurse managers' transformational leadership behavior relates to innovative work behaviors of subordinate nurses, in Pakistan, and revealed that transformational leadership has the strongest positive relationship with innovative work behaviors.

As well as, *Umrani & Afsar (2018),* who studied the influence of transformational leadership behavior on the employees' innovative work behaviors, in Afghanistan, and revealed that transformational leadership behavior completely influenced innovative work behaviors. Additionally *Ahmed et al., (2019)* showed that there were highly significant and positive correlations between innovative work behavior as regards all multifactor leadership behaviors and organizational climate.

Furthermore, the previous findings go in the same line with those of a study conducted, in Kabul, Afghanistan, by *Muzafary et al. (2019)* who studied the influence of transformational leadership on the employees innovative work behavior, and recognized that transformational leadership completely influences innovation work behavior. In this respect, *Yang et al., (2019)* showed that humble leadership had a low positive correlation with innovative behavior.

Also, the current study results shows a significant statistical association between staff nurses' perception of head nurses' predominant leadership behaviors and their total innovative behavior. The previous study findings could be related to that the leaders with transformational behavior motivate workers by mean of purposeful tasks that tend to be challenging for their followers. Those leaders communicate vision, encourage hard work and express important goals simply. Team spirit is excited by arousing enthusiasm, optimism tolerates risk-taking and encourages the adoption and implementation of new ideas with decentralization and a participatory spirit provides an environment conducive to the innovation development in an inner environment. Leaders who promote and provide staff more decision making autonomy in all actions related to tasks they perform and support new activities.

Moreover, the current study result shows a significant statistical association between staff nurses' perception of head nurses' innovative total behaviors and their leadership behaviors except their active and passive Management by Exception and Laissez-Faire leadership behavior. Also, there is a significant statistical association between staff nurses' perception of head nurses' innovative behaviors and leadership outcomes. Along with this result *(Abd El Muksoud et al., 2022)* displays that there was statistically significant and moderate positive correlation between innovative work behaviors and all multifactor leadership behaviors.

Furthermore, our study results represents a statistically significant positive correlation between staff nurses' scores of perception of their head nurses' transformational Leadership behavior and Transactional Leadership behavior with their leadership outcomes. While, there is a statistically significant negative correlation is shown between staff nurses' scores of perception of their head nurses' Laissez-faire leadership behavior and their Effectiveness out comes and Satisfaction out comes

In congruent with these results, previous study *(Cummings et al., 2018)* that transformational leadership behaviors enhanced satisfaction, effectiveness, and improved extra effort from staff. However, *Cummings et al.*

(2018) reported that transactional leader behaviors resulted in reduced satisfaction and effectiveness and productivity among nurses that counteract the results in this study. Moreover, laissez-faire leadership was associated with lower levels of nurse job satisfaction and effectiveness.

Additionally the study results presents the best fitting multiple linear regression model for staff nurses' innovative behavior scores that indicates, discussing new ideas with peers, being encouraged to apply these ideas and participating in hospital improvement projects are statistically significant dependent positive predictors for staff nurses' innovative behavior score and for own perception of their head nurses' leadership innovative behavior scores. This results showed the importance of head nurses role in creating a supportive climate that provide nurses with power and chance for development and upgrading.

Innovative leadership behavior is important for nurses in today's dynamic healthcare systems. Leaders' support for innovation to bring about improvement in healthcare systems is an important factor in these systems. Innovative behavior among employees is critical for the long-term survival and success of an organization, this innovative behavior is beneficial for generating new ideas, which subsequently elevates their work performance *(Dabić et al., 2021).*

In conclusion research provides relevant implications for nursing management. On the one hand, hospital managers should foster transformational behaviors in order to promote nurses' innovative behavior. Formal leadership training program need to consider self-awareness, appreciation of others contributions and openness to new ideas as key element to motivate nursing innovation. On the other hand, transformational leadership could also boost nurses' work engagement. This provides an alternative way apart from current strategies to make nurses invest more personal energy and resources in work, which is critical to patient-centered care. And work engagement transmits transformational leadership's positive effect to enhance nursing innovation.

Conclusion:

- Based on the study findings, it can be concluded that :

- there is a significant statistical association between staff nurses' perception of head nurses' innovative total behaviors and their leadership outcomes and leadership behavior.
- In addition around two third of the studied staff nurses have high total perception of innovative behaviors of their head nurses and around three quarter have high perception of Innovative work behavior.

Recommendations

- In the light of the current study findings it is recommended that:
- **In the light of the current study findings it is recommended to:**
- Foster and encourage innovation as a work necessity and include innovation-related training opportunities in nursing.
- Respond positively to the nurses' innovative efforts by supporting them with the time and resources to carry out.

Further studies are recommended to:

- Further studies are recommended to
- Study the impact of staff nurses' innovative behavior on organizational productivity .

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