Ambidextrous Leadership and its Relation to Innovative Work Behavior among Staff Nurses

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Abstract

Background: Today's healthcare environment, ambidextrous leadership is essential for fostering innovation by balancing the exploration of new ideas with supporting existing processes and encouraging risk-taking. **Aim of the study**: The study aimed to investigate ambidextrous leadership and its relation to innovative work behavior among staff nurses. **Research Design:** A descriptive correlational design was utilized in this study. **Settings:** This study was conducted at Cardio Vascular Hospital, that is affiliated to Ain Shams University Hospitals. **Subjects:** The study included 106 of the staff nurses. **Tools of data collection**: Two tools namely Ambidextrous Leadership Scale and innovative work behavior scale. **Results:** The overall ambidextrous leadership among staff nurses shows that a notable 83.0% perceive it as high. However, the remaining 12.3% of nurses rate ambidextrous leadership as moderate, and only 4.7% as low. Moreover, 80.2% of staff nurses rate their innovative work behavior as high. Conversely, 15.1% rate their behavior as moderate, and 4.7% as low. **Conclusion**: A statistically significant positive correlation was found between overall ambidextrous leadership and innovative work behavior among staff nurses. **Recommendation**: Introduce training programs for nurse leaders to improve their ambidextrous leadership skills by emphasizing the balance between exploring new ideas and optimizing existing processes.

Key words: Ambidextrous leadership, Innovative work behavior, Staff Nurse

Introduction

Nursing leadership is crucial for influencing outcomes within healthcare organizations, affecting both personnel and patients. As a significant portion of the leadership workforce approaches retirement, it is essential to identify factors that foster the development of future nurse leaders. Effective leadership development can transform existing leaders into individuals who seek out potential and encourage nurses to embrace leadership roles, while still preserving the profession's caring and nurturing qualities **(Cummings et al., 2020).**

Leader opening behaviors are identified by the resulting actions of followers, such as exploring new approaches, stepping away from routine work, experimenting with different methods, or expanding their knowledge to successfully complete an innovation task. **(Alghamdi, 2018).** These behaviors stimulate employees to engage in exploratory variance-increasing "search" behaviors. In contrast, leader closing behaviors emphasize the establishment of work routines, goal monitoring, and adherence to rules. These behaviors are intended to encourage employees to reduce variability in their actions, and promoting more consistent "production" behaviors **(Rosing and Zacher, 2017).**

Ambidextrous leadership had important outcomes related work-individual and organization, not merely relevant for innovative performance. Thus, ambidextrous leadership has broader effects than originally theorized. Future research is necessary to delineated more clearly for which outcomes ambidextrous leadership is most important **(Rosing and Zacher, 2023).**

Ambidextrous leadership theory posits that the interplay of a leader's behaviors between opening behaviors and closing behaviors enhances followers' exploration and exploitation behaviors, which ultimately increases innovative outcomes **(Klonek, Gerpott and Parker,2020).** Moreover, ambidextrous leadership theory asserts that

leaders must engage in both types of behaviors in accordance with the requirements of innovation tasks in order to promote innovation outcomes **(Rosing and Zacher, 2023).**

Innovative workplace behavior is positively influenced by the combined effect of opening and closing leader behaviors **(Usman et al., 2022)**. When an organization fosters a climate that supports innovation, the assembly between ambidextrous leadership and innovative work behavior can become more pronounced. This type of environment impacts both leaders and employees by encouraging them to simultaneously maintain and question existing practices while generating new ideas **(Akıncı et al., 2022).**

Innovative work behavior involves actions aimed at implementing changes, applying new knowledge, generating new ideas, and modifying work processes to enhance performance. It encompasses the processes of generating, establishing, evaluating, and implementing creative ideas, which can be applied in research, management, education, clinical practices, and other areas. Innovative behavior can be measured by generating ideas, seeking support, and realizing ideas in our research **(xiang et al., 2023).**

Innovative work behavior among healthcare workers is essential for fostering innovation. However, the issues that determine this behavior are not yet fully understood, and there is a growing need for further empirical research into how organizational-level factors influence individual innovation **(Carlucci, et al., 2021).**

Innovation is a crucial factor for the survival and sustainable competitive advantage of the health sector in today's dynamic and highly competitive environment. Individuals, as primary drivers of innovation, not only generate creative ideas but also actively work to implement them. Innovative work behavior is deliberate and purposeful, offering benefits both to individuals and to organizations as improves performance at both individual and team levels **(Baig et al.,2022).** Moreover, innovative behavior have several effect included job productivity, lower levels of job burnout, job satisfaction, solving the organizational problems, organizational commitment, organizational efficiency, and effectiveness **(Asurakkody and Shin ,2018).**

Significance of the study:

Ambidextrous leadership, as highlighted by **Mom et al., (2019)**, is crucial for driving innovation in healthcare. By balancing the processes of exploration (creating new approaches) and exploitation (enhancing current practices), this leadership style empowers nurses to improve patient care. The duality of focus fosters adaptability and innovation within healthcare teams, contributing to greater job satisfaction, improved performance, and better patient outcomes. Therefore, integrating ambidextrous leadership in nursing is essential for maintaining continuous innovation in the complex and evolving healthcare organization.

Exploring ambidextrous leadership is crucial to confront the growing complexities/change and demands in healthcare settings. Moreover, nursing as a one of the professions where innovation and change are experienced intensely. Innovation plays a vital role in continuous improvement and efficiency. Additionally few studies in the literature have evaluated ambidextrous leadership and innovative behavior among nurses and nursing education **(Kemer, et al .,2022).** So, the study aimed to investigate ambidextrous leadership and its relation to innovative work behavior among staff nurses.

Aim of the study:

This study was aimed at investigating ambidextrous leadership and its relation to innovative work behavior among staff nurses through:

1- Assessing staff nurses' perception regarding ambidextrous leadership.

2- Assessing innovative work behavior level among staff nurses.

3- Investigating the relation between ambidextrous leadership and innovative work behavior among staff nurses.

Research Questions:

1.What are staff nurses' perceptions of ambidextrous leadership?

2.What is the level of innovative work behavior among staff nurses?

3.Is there a relation between ambidextrous leadership and innovative work behavior among staff nurses?

SUBJECTS AND METHODS

Research design

The study applied a descriptive correlational design.

Research Setting

The study was carried out at Cardio Vascular Hospital due to its role in treating patients with critical diagnoses that necessitate innovative decision-making throughout various processes. The hospital is considered one of the new affiliates of Ain Shams University Hospitals. The consists 9 units (operation units, emergency department, thoracic surgery OR, cardiac Cath OR, CCU, Chest ICU, Pediatric ICU, Inpatient units 6^{th} and 7^{th} floors).Total bed capacity is (150)beds.

Research Subjects

Subjects of the study included 106 out of 145 staff nurses who working at aforementioned study setting, calculated by the following equation which developed by **(Thompson, 2012).**

Sample size:

$$n = = \frac{N \times p(1-p)}{[N-1(d2/z2)]\,p(1-p)}$$

n : represents the sample size.

N: denotes the population size.

d: is the margin of error, set at

z :is the z-score corresponding to a 95% confidence level, which is 1.96.

p: is the estimated proportion of the attribute, with a default value of 0.50 for neutrality.

Inclusion criteria

Participants should possess at least one year of clinical work experience.

Sampling technique: study subjects were selected through a simple random sampling method.

Data collection tools

Two tools were used for data collection.

Tool I: Ambidextrous Leadership Scale: This tool was created and adopted from **(Rosing et al., 2011 and Akıncı et al., 2022).** It was applied to assess staff nurses' perception regarding ambidextrous leadership. It consisted of two parts as follows:

Part 1: This section encompassed various characteristics of the nurses, including their gender, education level, age, marital status, years of experience, and work department.

Part 2: This section covered the two dimensions of ambidextrous leadership, specifically: opening leader behavior, such as "my leader encourages independent thinking and action," and closing leader behavior, exemplified by "my leader takes corrective action." Each dimension comprises seven items.

Scoring system

A five -point Likert scale was used to measure the responses, with options ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). The total scale score was calculated using the average scores of all dimensions, A percent score was calculated and classified into high Ambidextrous Leadership: A percent score of 75% or more, which corresponds to a total scale score of 53 to 70 points. Ambidextrous leadership is categorized based on the total scale score as follows: A high level of ambidextrous leadership is indicated by a total score between 53 and 70 points, corresponding to a strong application of both opening and closing leader behaviors and a percentage score of 75% or more. A moderate level is represented by a total score from 42 to 52 points, reflecting a moderate application of these behaviors and a percentage score between 50% and 74%. A low level of ambidextrous leadership is signified by a total score below 42 points, showing a weaker application of opening and closing behaviors and a percentage score under 50% (**Rosing et al., 2011 and Akıncı et al., 2022).**

Tool 2: Innovative Work Behavior scale:

This tool used to assess innovative work behavior level among staff nurses. This tool was developed and adopted from **(Lukes and Stephan, 2017).** It includes twenty-three items categorized into seven main dimensions: idea generation (three items) as "When something does not function well at work, I try to find new solution ", idea search (three items) as "I search for new ideas of other people in order to try to implement the best ones", idea communication (four items) as " I try to show my colleagues positive sides of new ideas", implementation starting activities (three items) as "I develop suitable plans and schedules for the implementation of new ideas", involving others (three items) as " I try to involve key decision makers in the implementation of an

idea", overcoming obstacles (four items) as " I usually do not finish until I accomplish the goal" and innovation outputs (three items) as "Whenever I worked somewhere, I improved something there".

Scoring system

Responses were evaluated using a 5-point Likert scale, where 1 represented Strongly Disagree and 5 represented Strongly Agree. The total scale score was calculated using the average scores of all dimensions, a total score ranging from 23 to 115. A score below 60% (23-68 points) indicates low engagement in innovative behaviors, while a score between 60% and 74% (69-85 points) reflects moderate engagement in innovative behavior. A score of 75% or more (86-115 points) signifies high innovative behavior **(Lukes and Stephan, 2017).**

Preparatory phase

This phase covered 2 months started from the ending of December, 2023 to February, 2024. During this phase, the researchers reviewed the literature related to ambidextrous leadership and innovative work behavior. This served to develop the study tools for data collection.

Tools validity

The tools were translated into Arabic and back translated into English. The consistency between the English and Arabic versions was checked. Tools of data collection were presented to a panel of experts (5), specialized in nursing administration for examine face and content validity. They reviewed the content of the tools for their comprehensiveness, accuracy, clarity, and relevance.

Reliability

The internal reliability of the Ambidextrous Leadership and Innovative Work Behavior scales was evaluated using Cronbach's alpha coefficient. The results showed that the Innovative Work Behavior scale had a score of 0.88, indicating strong reliability, while the Ambidextrous Leadership scale had a score of 0.91, reflecting even higher reliability.

Pilot study:

A pilot study was conducted with 10% of participants (15) staff nurses of study sample. The pilot served to examine the clarity and applicability of the tools. It assessed feasibility of the tools and determined the time required to complete the questionnaire which was 20-25 minutes. The pilot sample was excluded from the main study sample and no modification were done for the tools items.

Field work:

After obtaining official approval to conduct the study, the researchers met with the nursing director at the hospital to determine a suitable time for data collection. Subsequently, the researchers explained the study's aim and nature to the participants, which helped facilitate their acceptance and willingness to participate. The tools were distributed individually, and the completed questionnaires were collected and checked for completeness. Researchers were present during the data collection process to provide necessary instructions. Each nurse took approximately 20-25 minutes to complete the questionnaire and returned it to the researchers. Data collection occurred three days a week—on Sundays, Wednesdays, and Thursdays during the morning shift**.**

Administrative Design:

An official permission and approval to carry out the study were obtained. Then met hospitals directors and head nurses in all units, the study's objectives and data collection methods were explained to secure permission for conducting the research. Confidentiality was ensured, and data collection forms remained anonymous.

Ethical consideration:

Before conducting the study, written ethical approval was secured from the scientific research and ethical committee at the Faculty of Nursing, Ain Shams University. The researchers explained the study's aims and objectives to the participating nurses prior to commencement. Informed written consent was obtained from each participant. Participants were assured that all information gathered would remain confidential and be used solely for research purposes. They were also informed of their right to withdraw from the study at any time without any consequences.

Statistical Design:

The process of entering data and performing statistical analysis was executed using IBM SPSS Statistics (version 23).

Descriptive data were summarized with frequencies and percentages, while the main item scores were presented using means and standard deviations. Pearson's correlation analysis was conducted to assess the relationship between the primary study variables to identify the independent predictors of ambidextrous leadership and innovative work behavior among staff nurses, multiple linear regression analysis was used. The reliability of the scales was evaluated using Cronbach's alpha. Value of p less than 0.05 were deemed statistically significant, and value of p value less than 0.001 were regarded as highly statistically significant.

Results

Table 1 shows that, 44.3 % of studied staff nurses were aged between 30 to 40 years with a mean age of 32.52 ±4.65, Additionally, 62.3% of staff nurses were female. Moreover, 53.8%of staff nurses had a nursing diploma degree. Regarding marital status, 75.5 % of the participants were married. As for work experience, 37.7 % of the participants had spent between 10 and 20 years at current position with a mean of 12.42 ± 4.26 years.

Table 2 reveals that a substantial majority of staff nurses rate opening leader behavior as high 87.8% and closing leader behavior as high 81.1%. However, it noticed that 4.7% of nurses rate opening leader behavior as low, and 5.7% rate closing leader behavior as low. Overall, 83.0% of staff nurses perceive ambidextrous leadership as high. Conversely, 12.3% of nurses rate ambidextrous leadership as moderate, and only 4.7 % rate it as low.

Table 3 demonstrates that 84.9% of staff nurses had a high level of implementing starting activities. Meanwhile, overcoming obstacles had the lowest proportion of high ratings, at 37.6%, compared to other dimensions. The total scores indicate that 80.2% of staff nurses rate their innovative work behavior as high. Conversely, only 15.1% rate their behavior as moderate, and 4.7% rate it as low.

Table 4 illustrates statistically significant positive correlations between the opening leader behavior dimension and innovative work behavior. However, there is no statistically significant relation between closing leader behavior and innovative work behavior.

Table 5 demonstrates a notable positive correlation between ambidextrous leadership and innovative work behavior among staff nurses.

In multivariate analysis, **Table 6** shows that both ambidextrous leadership and marital status significantly impact innovative work behavior, with ambidextrous leadership having a more pronounced effect. The model encompasses 33.3% of the variance in innovative work behavior.

Table (1): Frequency and percentage distribution of the personal characteristics of the studied staff nurses (N = 106).

		Frequency	Percent
Age:	< 30	32	30.2
	30-40	47	44.3
	>40	27	25.5
	Mean± SD 32.52 ± 4.65		
Gender:	Male	40	37.7
	Female	66	62.3
Nursing Qualification:	Nursing Diploma	57	53.8
	Technical Institute of nursing	35	33.0
	Bachelor of Nursing	14	13.2
Marital status:	Single	26	24.5
	Married	80	75.5
Experience years in current position:	<10	30	28.4
	10-20	40	37.7
	>20	36	33.9
	Mean± SD 12.4 2 ± 4.2 6		

Table (2): Ambidextrous Leadership dimensions as perceived by staff nurses

Ambidextrous Leadership Dimensions	High		Moderate		Low	
	No	%	No	%	No	%
Opening leader behavior	93	87.8	8	7.5	5	4.7
Closing leader behavior.	86	81.1	14	13.2	6	5.7
Total	88	83.0	13	12.3	5	4.7

Table 3: Staff nurses' level regarding innovative work behavior dimensions

Innovative work behavior Dimensions	High		Moderate		Low	
	No	%	No	%	No	%
1. Idea generation	84	79.2	15	14.2	7	6.6
2. Idea Search-	83	78.3	20	18.9	3	2.8
3. Idea communication-	80	75.4	18	16.9	8	7.5
4. Implementation starting activities-	90	84.9	10	9.4	6	5.6
5. Involving other	86	81.1	17	16.1	3	2.8
6. Overcoming obstacles	78	37.6	16	15.1	12	11.3
7. Innovation output	88	83.0	9	8.5	9	8.5
Total	85	80.2	16	15.1	5	4.7

Table (4): Correlation matrix among ambidextrous leadership dimensions and innovative work behavior dimensions.

Innovative work behavior Dimensions	Ambidextrous Leadership dimensions			
	Opening leader behavior		Closing leader behavior	
	R	P value	R	p value
1. Idea generation	0.85	0.000**	1.34	0.8610
2. Idea Search	0.92	0.000**	1.15	0.7800
3. Idea communication	0.87	0.000**	1.20	0.8120
4. Implementation starting activities	0.89	0.000**	1.25	0.8450
5. Involving other	0.88	0.000**	1.30	0.8550
6. overcoming obstacles	0.90	0.000**	1.28	0.8400
7. Innovation output	0.91	0.000**	1.32	0.8700

(**) Highly statistically significant at p< 0.001

Table (5): Correlation between ambidextrous leadership and innovative work behavior among staff nurses.

Variables	**R**	P-value
Ambidextrous leadership Innovative work behavior	0.352**	0.001**

(**) high statistically significant at p< 0.001.

Table (6): Best Fitting Multiple linear regressions Model for ambidextrous leadership and innovative work behavior (n=106)

Variables	Unstandardized Coefficient		Standardized Coefficient	T- test	P value	Zero-order	Partial
	B	Std. Error	B			r	R
Constant	2.832	.192	-	14.762	0.000	-	-
Ambidextrous leadership	0.247	0.102	0.230	4.993	.009**	.424	.333
Marital status	0.199	0.113	0.176	5.603	.006**	.143	.065
R^1 square .333 R^2 square .163 F= 10.553 p value .000							

Discussion

Healthcare organizations are considered to be very complex, uncertain environments undergoing change to provide the best patient care and treatments. In this regard, innovation is essential for the survival and prosperity of hospitals **(Flessa & Huebner, 2021).** Ambidextrous leadership is expected to stimulate innovative work behavior by combining opening behaviors, which aim at stimulating the generation of new ideas, and closing behaviors, which focus on refining current processes **(Kousina & Voudouris, 2023).**

Concerning the dimensions of ambidextrous leadership, the current study findings reveal that the majority of staff nurses rated opening leader behavior as high, and more than three-quarters of staff nurses rated closing leader behavior as high. As observed, opening leader behavior was slightly higher compared to closing leader behavior. This might be rationalized as opening behaviors are associated with adaptability and flexibility, which are crucial in a dynamic healthcare environment, especially in a cardiovascular hospital. Nurses may find leaders better equipped to handle changes and unexpected challenges, leading to more effective and responsive leadership. This result is in agreement with **Mascareño et al., (2021)**, who noted that the opening leader behaviors dimension had the highest mean score. Similarly, **Klonek et al., (2020),** found that perceptions were significantly higher in the opening condition compared to the closing condition.

Concerning overall ambidextrous leadership, the current study reveals that the majority of staff nurses view it as high. Conversely, a smaller segment rates it as moderate, and a few see it as low. From the researchers' view point, this high perception indicates that staff nurses highly value leaders who skillfully balance both opening and closing behaviors. It suggests that nurses appreciate leaders who foster independent thinking and creativity while also offering essential guidance and corrective measures."

This result aligns with the findings of **Kemer et al., (2022),** who reported that nurses perceived a high level of ambidextrous leadership. On the other hand, **Cai et al., (2023)** found that over half of the participants indicated that their leaders displayed a moderate level of ambidextrous leadership behavior.

Concerning dimensions of innovative work behavior, current study findings revealed that the majority of staff nurse had high level regarding implementing starting activities dimension. While, overcoming obstacles" has the lowest proportion of high ratings compared to other dimensions. The study shows that most staff nurses excel in "Implementing Starting Activities," meaning they are effective at turning new ideas into action. However, the overcoming obstacles dimension has the lowest ratings, indicating that while nurses generally handle challenges well, they might face some difficulties in this area. This suggests that while they are strong in initiating innovation, additional support may be needed to help them persistently tackle obstacles.

The study's findings are consistent with those of **Mekhael et al., (2023),** who reported that majority of staff nurses exhibited a high level of engagement in the dimension of implementation starting activities. Another study conducted in Critical Care Units agreed with the current study's findings and concluded that the idea of championing and implementation dimensions had the highest mean score **(Kamel and Aref, 2017).**

With respect to the relationship between the studied variables, the current results demonstrated a statistically significant positive correlation between ambidextrous leadership and innovative work behavior among staff nurses. The result might be stem from leaders who balance explorative and exploitative behaviors foster an environment where innovation is encouraged and supported.

This study is consistent with **Akıncı et al., (2022),** who discovered that the combined effects of ambidextrous leadership have a positive impact on innovative work behavior. Likewise, **Zuraik (2022),** highlighted that ambidextrous leadership behaviors are crucial for boosting innovative performance. Supporting these findings, **Oluwafemi et al., (2020**) also showed that integrating both opening and closing leader behaviors enhances innovation.

Regarding total innovative work behavior, the current study results show that most staff nurses rate their innovative work behavior as high. In contrast, only a small number rate their behavior as moderate, and fewer than 5% rate it as low. The results indicating that most staff nurses rate their innovative work behavior as high. From the researchers' viewpoint, this can be attributed to several factors as nurses are actively involved in creating, sharing, and executing new ideas, reflecting a conducive environment for innovation. This favorable result may stem from effective leadership practices that promote creativity and problem-solving, as evidenced by the positive perceptions of ambidextrous leadership.

This result was in disagreement with **Abd-Elmoghith (2024),** who reported that staff nurses perceived high level of innovative work behavior. As well, the result reported by **Omar etal,, (2022),** who demonstrated less than one third of staff nurses had a high level of innovative work behaviors, while, less than two fifth of them had a low level of innovative work behaviors.

Regarding correlation matrix among ambidextrous leadership dimensions and innovative work behavior. The results demonstrated a statistically significant positive correlations between opening leader behavior dimension and innovative work behavior. However, there is no statistically relation between closing leader behavior and innovative work behavior.

From a researchers' perspective, leaders who demonstrate behaviors that promote creativity, exploration, and experimentation tend to cultivate an environment favorable to innovation. Conversely, the absence of a statistically significant correlation between controlling leader behavior and innovative work behavior implies that behaviors centered on control, standardization, and strict adherence to established procedures do not directly impact innovation. In summary, this highlights the importance of balancing both types of leadership behaviors to effectively promote innovation within teams and organizations.

The result was contrary to the study by **Gerlach et al., (2020),** which demonstrated positive correlations between both opening and closing leader behaviors and innovative performance. In a related study, **Oluwafemi et al., (2020)** proposed that adaptive and flexible leadership reflects a leader's capability to alternate between different behaviors, such as opening and closing, effectively."

From the researchers' perspective, these findings suggest that while both leadership style and personal factors contribute to innovative behavior, the role of ambidextrous leadership is particularly pivotal in driving innovation among staff nurses. In agreement with this present study finding, **Mutonyi (2024),** showed that ambidextrous leadership styles were positive and significant predictors of hospital innovation."

The multivariate analysis shows that ambidextrous leadership and marital status both directly impact innovative work behavior, with ambidextrous leadership having a more pronounced effect. This result might be due to leaders who skillfully balance encouraging creativity and offering guidance can significantly boost innovation. Additionally, marital status also affects how nurses participate in innovative activities, suggesting that personal situations influence their creativity. Recognizing these factors can help develop better strategies to foster innovation at work.

This finding contrasts with **Abdel Muksoud's (2022)** study, which found statistically significant relationships between staff nurses' innovative work behaviors and their educational level and attendance at training courses.

Conclusion

The study's findings, revealed that there was a positive correlation between ambidextrous leadership and innovative work behavior. Also, summarized that leaders who skillfully manage both exploration of new ideas and exploitation of existing processes can greatly enhance organizational creativity.so, this conclusion emphasizes the significance of ambidextrous leadership that fosters innovation at workplace.

Recommendations:

- Implement training programs for leaders that focus on developing skills necessary for balancing exploration and exploitation.

- Hold well-organized regular brainstorming meetings where nurses can discuss ways to enhance their work processes that meet competing demands.
- Establish online forums or platforms where nurses can exchange innovative practices.
- Further research
- Investigate how organizational culture and climate impact the effectiveness of ambidextrous leadership in fostering innovation.
- Top of Form
- Bottom of Form
- Examine the relation between ambidextrous leadership and team performance
- Investigate the relation between workplace innovation organizational efficiency.

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