

The Relation between Entrepreneurial Leadership and Innovative Work Behavior among Nurses at Menoufia University Hospital

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Abstract: Background: Entrepreneurial leadership is becoming concept in health that can affect and direct performance and achievement of either staff or organizations goals. Entrepreneurial leadership and innovative work behavior are widely regarded as an important basis for competitive advantage in work environment and enhancing capabilities for work growth and the wealth of nations. **Purpose:** To assess the relation between entrepreneurial leadership and innovative work behavior among nurses at Menoufia University Hospital. **Design:** A correlational research design was used. **Setting:** The study was conducted at Menoufia University Hospital. **Subjects:** A convenient sampling of 300 nurses constitutes the study sample. Two instruments were used which are entrepreneurial leadership questionnaire and innovative work behavior scale. **Results:** showed that More than half (59.7%) of studied nurses had high level of entrepreneurial leadership and more than two fifth (46%) of them had high level of innovative work behavior while, the minority (6.3% ,16%) of them had low level of both entrepreneurial leadership and innovative work behavior respectively. **Conclusion:** There was a highly statistically significant positive strong correlation between entrepreneurial leadership and innovative work behavior among studied nurses. **Recommendations:** Conduct training program for nurses to enhance their knowledge and skills related to entrepreneurial leadership and innovative work behavior. Further study about barriers affecting entrepreneurial leadership and innovative work behavior in different health care sectors.

Keywords: *Entrepreneurial leadership, Innovative work behavior, Nurses.*

Introduction

Leadership is one of the most influencing skills that are supposed to be present at all levels of health care organizations, especially in managerial

positions (Bakkal et al., 2022). This includes constructive leadership, which positively affects perceptions of meaningful work and promoting sense

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of well-being and performance, and destructive leadership, which negatively affects perceptions of meaningful work, sense of well-being and performance (Kaluza et al., 2020). Entrepreneurial leadership is a unique type of constructive leadership, Entrepreneurial leadership is perceived as the head nurses' ability to visualize and anticipate even preserve flexibility, think strategically, willing to work with others. Entrepreneurial leadership can generate entrepreneurial behavior for the work groups connected with a common goal. Such behavior reinforces, and enhances change, creativity among subordinates and leaders having initiative, vision, and transformation, as well innovativeness (Dhiman et al., 2021). Entrepreneurial leadership is seen as one of leadership behavior that inspires subordinates by creating a vision, wins subordinates' commitment, and is dedicated to discovering and creating strategic value (Pu et al., 2022). Entrepreneurial leadership could generate entrepreneurial behavior for nursing leaders who work to achieve organizational goals. Such behavior strengthen, enhances and support change, creativity among nursing personnel, improves work engagement, reinforces being initiative, conductive, and effective decision-makers .Framing challenges, absorbing uncertainty, underwriting, building commitment and defining gravity are subscales of nurse managers 'entrepreneurial leadership that can lead to effective work engagement (Jakobsen et al. , (2021).

Innovative work behavior is defined as all employee behavior directed at the generation, introduction, and application (with in a role, group, or organization) of ideas, process, products ,or procedures new to the relevant unit of adoption that supposedly significantly benefit. innovative work behavior can be defined as generating novel ideas and putting effort to implement them with confidence , overcoming possible challenges to produce new procedures, treatment strategies, or policies for restoring and promoting health of patients or clients(Yan et al., 2020). Innovative work behavior (IWB) is one of the important things that allow any groups to achieve organizational goal. Hence, it should be carried out sustainably by profit-oriented and non-profit organizations. One of the non-profit organizations that should apply IWB is public organization. Public organizations are characterized by their numerous procedures and regulations that provide a high degree of control and a low degree of flexibility. A typical innovative demand on public servants deals with utilizing resources to create innovative outcomes as described by the base of the organization and the political system (Prameswari, et al., 2020). Entrepreneurial leaders could empower nurses to have work commitment, motivate employees to participate in their job and show a desire for coming up with original ideas and creative work practices. They also promote pleasant feelings, conciliation, trust, and communication (Bagheri and Harrison, 2020).

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Entrepreneurial leadership is positively correlated with an organization's innovative environment. In their view, entrepreneurial leaders foster an environment that encourages their members to think differently, generate new ideas, and find innovative solutions to problems. Entrepreneurs may intentionally influence their employees' innovative behavior by creating a culture where they can develop new ideas and achieve them without feeling intimidated. Therefore, EL creates a conducive environment for employees to be innovative. Consequently, the leaders of any business play a crucial role in developing and influencing the business's climate, which stimulates favorable behaviors (Li et al.,2020).

Significance of the study

Nurses need to develop their work by having entrepreneurial and innovative characteristics at different care levels to respond to the growing and emerging needs in the health care sector. So, entrepreneurial leadership is a base of the survival of organizations through constant innovation that translates into the development of new services (Marques & Ferreira 2019). Moreover, alterations in patient' needs, health technology, and fiscal capitals, entail health care organizations reshape its structure and its process of care. Answering to these changes in active manner necessitates a different kind of leadership especially entrepreneurial leadership (Schildmeijer et al., 2020). Certainly, entrepreneurial leadership and innovative work behavior are the

key elements in quality improvement and compliance with care, practice, regulatory and accreditation standards in health care, they are associated with organizational context (Moazez et al., 2020). Therefore, this study aims to assess the relation between entrepreneurial leadership and innovative work behavior among nurses at Menoufia University Hospital.

Purpose of study

This study purposed to assess the relation between entrepreneurial leadership and innovative work behavior among nurses at Menoufia University Hospital.

Research questions

- 1) What is the level of nurses perception regarding entrepreneurial leadership at Menoufia University Hospital?
- 2) What is the level of innovative work behavior among studied nurses at Menoufia University Hospital?
- 3) What is the relation between entrepreneurial leadership and innovative work behavior among studied nurses at Menoufia University Hospital?

Subjects and Method

Study design:

A correlational research design was used in conducting this study.

Study Sample:

The sample size was determined by using (Yamane, 1976) formula to assess the sample size of nurses.

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$$n = N / 1 + N (e)^2$$

N → total number of nurses are (1200)
nurse

n → sample size

e → error tolerance (.05)

1 → a constant value

$$\begin{aligned} \text{Sample size of nurse} &= 1200 / \\ &(1+1200) \times (.05)^2 \\ &= 300 \text{ nurses.} \end{aligned}$$

Sampling technique:

A convenient sampling technique was used to select nurses who were available at the time of the study, accepted to participate in this study, had at least two years of experience and who were working at Menoufia University Hospital.

Study setting:

This study was conducted in selected units at hospital at Shebin El-Kom, Menoufia Governorate, Egypt, namely: Menoufia University Hospital. Menoufia University Hospital was established in 1993. The bed capacity of the University Hospital is 1000 beds. This hospital is divided into four building. Three of these buildings are interlinked and one separate building namely Oncology.

Instruments of data collection:

Two instruments were used for data collection:

Two instruments were utilized for data collection to conduct this study, entrepreneurial leadership questionnaire and innovative work behavior scale.

Instrument one: Entrepreneurial leadership questionnaire

This instrument was developed by Nametallh et al.,(2022). It used to assess entrepreneurial leadership as perceived by studied nurses.

It was included two parts:

- **Part one:** personal characteristics data of studied nurses: is a structured questionnaire was designed to obtain personal data of the nurses include age, sex, marital status, years of experience in nursing, level of education and working area.
- **Part two:** It consists of 47 items regarding entrepreneurial leadership divided under seven dimensions as follows: risk-taking 6 items, pro-activeness 5 items, innovativeness 9 items, autonomy 6 items, competitive aggressiveness 6 items, taking ownership 11 items, and self-confidence 4 items.

Scoring system

The studied nurses' responses were assessed by using, a 5-point Likert scale ranged from (1) strongly disagree, (2) disagree, (3) neutral, (4) agree and (5) strongly agree. Total scores were computed by summing up the responses for each item. Total score was ranged from (47 to 235). In addition, the higher the score, the higher level of entrepreneurial leadership. Score was less than 60% (47-140), means low level, Score was equal or more than 60% to less than 75% (141-176) means moderate level and score was equal or more than 75% (177-235), means high level of

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entrepreneurial leadership. (Nametallah et al.,2022).

Instrument two: Innovative work behavior scale

Innovative work behavior scale was developed by (Lukes & Stephan, 2017). It used to assess the level of innovative work behavior as reported by nurses.

It consisted of 23 items and divided under seven dimensions as follows: Idea generation (3 items), Idea search (3 items), Idea communication (4 items), Implementation starting activities (3 items), Involving others (3 items), Overcoming obstacles (4 items), innovation outputs (3 items).

Scoring system

The studied nurses' responses were assessed by using, a 5-point Likert scale ranged from (1) strongly disagree, (2) disagree, (3) neutral, (4) agree and (5) strongly agree. Total scores were computed by summing up the responses for each item. Total score was ranged from (23 to 115). In addition, the higher the score, the higher level of innovative work behavior. Score was less than 60% (23-68), means low level of innovative work behavior, Score was equal or more than 60% to less than 75% (69-86) means moderate level and score was equal or more than 75% (87-115), means high level of innovative work behavior. (Lukes & Stephan, 2017)

Validity and reliability of instruments:

Validity:

Both instruments were tested for validity in the following studies (Nametallah's 2022) had tested entrepreneurial leadership structured questionnaire. In the same line, (El-Sewefy's 2023 and Lukes&Stephen 2017) had tested innovative work behavior scale. Because the investigator used the instruments without any changes, there was no need to test its validity.

Reliability:

Reliability for the utilized instruments was tested to determine the extent to which the items of the instruments are inter-correlated to each other. The Cronbach's alpha model is one of the most popular reliability statistics in use today and considered as a model of internal consistency that is used to estimate reliability of test scores. The statistical equation of Cronbach's alpha reliability coefficient normally ranges between 0-1, (Malkewitz et al., 2023). Cronbach's alpha of entrepreneurial leadership questionnaire was equal 0,95. Cronbach's alpha of innovative work behavior scale was equal 0.96. So, these values indicated that the two instruments were highly reliable.

Pilot study:

After reviewing the instruments, the investigator conducted a pilot study before administering the final questionnaire. The purpose of the pilot study was to ascertain clarity, relevance, feasibility, applicability of the study instrument and to determine obstacles that may be encountered during data collection. It was also

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helpful to estimate the time needed to fill the study instrument. The pilot study was carried on 30 nurses which presented (10%) of sample size. No modification was done, so the sample of pilot study was included in the main sample. The time required to fill the two questionnaires were estimated to be 25-30 minutes.

Ethical consideration:

The study was conducted with careful attention to research ethical committee number (946) and rights of the participants before any attempt to collect data, an official approval letter was submitted to the Dean of the faculty of Nursing to the director of Menoufia University Hospital to collect data from the pr-mentioned study setting. The letter contained the title, purpose of the study and methods of data collection. Data collection procedures, analysis and reporting of the findings were undertaken in a manner designed to protect confidentiality of sample. The respondents' rights was protected by ensuring voluntary participation; so that informed consent was obtained by explaining the purpose, nature, time of conducting the study, potential benefits of the study and how data was collected. The respondents were assured that the data was treated as strictly confidential furthermore, the respondents' anonymity was maintained as they weren't required to mention their names.

Data collection procedure:

An official letter was sent from the Dean of the faculty of nursing containing title, the purpose and

methods of data collection to the directors of studied setting. Then a short briefing was conducted to orient the respondents to the objectives, possible risks and benefits of the study to gain their cooperation to participate in the study. After explanation of the purpose and nature of study, nurses who fulfilled the inclusion criteria were invited to participate in the study. Thereafter, data was collected through a structured interview questionnaire to ascertain all questions were answered and to clarify any inquiry and it took 25-30 minutes to accomplish the two questionnaires.

Data was collected in a period of four months from the beginning of October 2023 till the end of January 2024 in the morning, afternoon and night shifts with average three days/week. The average number of filled tools were 6-8 per day. Completed questionnaires were entered into an electronic database that was password-protected. Hard copies of the survey questionnaires were linked in a locked cupboard of the investigator.

Data analysis:

Data entry and analysis were performed using SPSS statistical package version 26. Categorical variables were expressed as number and percentage while continuous variables were expressed as (mean \pm SD). Chi-Square (X^2) in one sample used to compare differences between levels of entrepreneurial leadership as well as among the studied staff nurses. Crosstab Chi-Square (X^2) was used to test the association between row and column variable of qualitative data.

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ANOVA test was used to compare mean in normally distributed quantitative variables at more than two groups. Pearson correlation was done to measure correlation between quantitative variables. Linear regression analysis used to determine staff nurse's perception of entrepreneurial leadership and its effect on their innovative work behaviors.

For all tests, a two-tailed p-value ≤ 0.05 was considered statistically significant, P-value ≤ 0.01 was considered highly statistically significant.

Results:

Table (1) shows that more than half (54%) of studied nurses were ranged from 20 < 30 years old, with a mean age of 29.31 ± 3.22 and nearly two-thirds (60.3%) of studied nurses were female. Additionally, nearly two-thirds (64.3% & 61.3%) of them were married and were holding a certificate of Bachelor's degree of nursing, respectively. Considering years of experience, more than two-fifths (46%) of them had experience in nursing field lasting between 2 < 5 years of experience with a total mean of 5.67 ± 3.13 .

Table (2) represents that the total mean score and standard deviation of studied nurses regarding entrepreneurial leadership dimensions was 179.6 ± 22.6 (total score is 235). Additionally, the dimensions of self-confidence and ownership gained the higher mean percentage (80.7% & 77.7%) and ranked as the first and second dimensions of entrepreneurial

leadership respectively. While the dimension of Competitive aggressiveness and risk taking gained the lower mean percentage (75% & 73.4) and ranked as the sixth and seventh (last) dimension of entrepreneurial leadership. In addition to the presence of a highly statistically significant difference between the total mean scores of different dimensions of entrepreneurial leadership, at P = 0.000.

Table (3) represents that the mean score and standard deviation of total innovative work behavior dimensions among studied nurses was 84.81 ± 15.61 (total score is 115). Additionally, the dimensions of Involving others and Idea communication gained the higher mean percentage (78.8% & 76.5%) and ranked as the first and second dimensions of innovative work behavior respectively. While the dimension of innovation outputs gained the lower mean percentage (67.2%) and ranked as the seventh and last dimension of innovative work behavior. In addition to the presence of a highly statistically significant difference between the total mean scores of different dimensions of innovative work behavior, at P = 0.000.

Table (4) linear regression analysis was conducted to empirically determine whether entrepreneurial leadership was significant determinant of innovative work behavior among studied nurses. Regression results indicate the goodness of fit for the regression between of total entrepreneurial leadership and

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innovative behavior among studied nurses, was excellence. Additionally, F statistic of (27509) indicated that the overall regression model was highly significant ($P = 0.000$). As $\beta = (0.686)$ indicates that the increase in studied nurse's perception of entrepreneurial leadership by one standardized point score is associated with an increase in innovative work behavior by (0.686) standardized point score. Moreover, regression coefficients, revealed that independent variable (Total score of entrepreneurial leadership) is a positive predictor factor of innovative work behavior among studied nurses.

Figure (1) illustrates that more than-half (59.7%) of studied nurses had a high perception level of entrepreneurial leadership of their head

nurses, followed by more than one-third (34%) of them had a moderate level. While the minority (6.3%) of studied nurses had a low level. In addition to the presence of a highly statistically significant difference between levels of entrepreneurial leadership, at $P = 0.001$.

Figure (2) illustrates that nearly one-half (46%) of studied nurses had a high level of innovative work behavior, followed by more than one-third (38%) of them had a moderate level. While the minority (16%) of studied nurses had a low level. In addition to the presence of a highly statistically significant difference between levels of innovative work behavior, at $P = 0.001$.

Table (1): Frequency distribution of studied nurses' personal data (n= 300)

Personal data		N.	%
Age (year)	▪ 20 < 30	162	54.0
	▪ 30 < 40	134	44.7
	▪ 40 ≤ 50	4	1.3
	▪ Mean ± SD	29.31 ± 3.22	
Sex	▪ Male	119	39,7
	▪ Female	181	60,3
	▪ Male to Female ratio	0,7:1	
Marital status	▪ Married	193	64.3
	▪ Un married	107	35.7
Years of experience in nursing	▪ 2 < 5	138	46.0
	▪ 5 < 10	106	35.3
	▪ 10 ≤ 15	56	18.7
	▪ Mean ± SD	5.67 ± 3.13	
Level of education	▪ Secondary school Diploma	24	8.0
	▪ Technical degree of Nursing	77	25.7
	▪ Bachelor's degree of Nursing	184	61.3
	▪ Post-graduate studies	15	5.0

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Table (2): Total mean score of studied nurses regarding entrepreneurial leadership dimensions (n= 300)

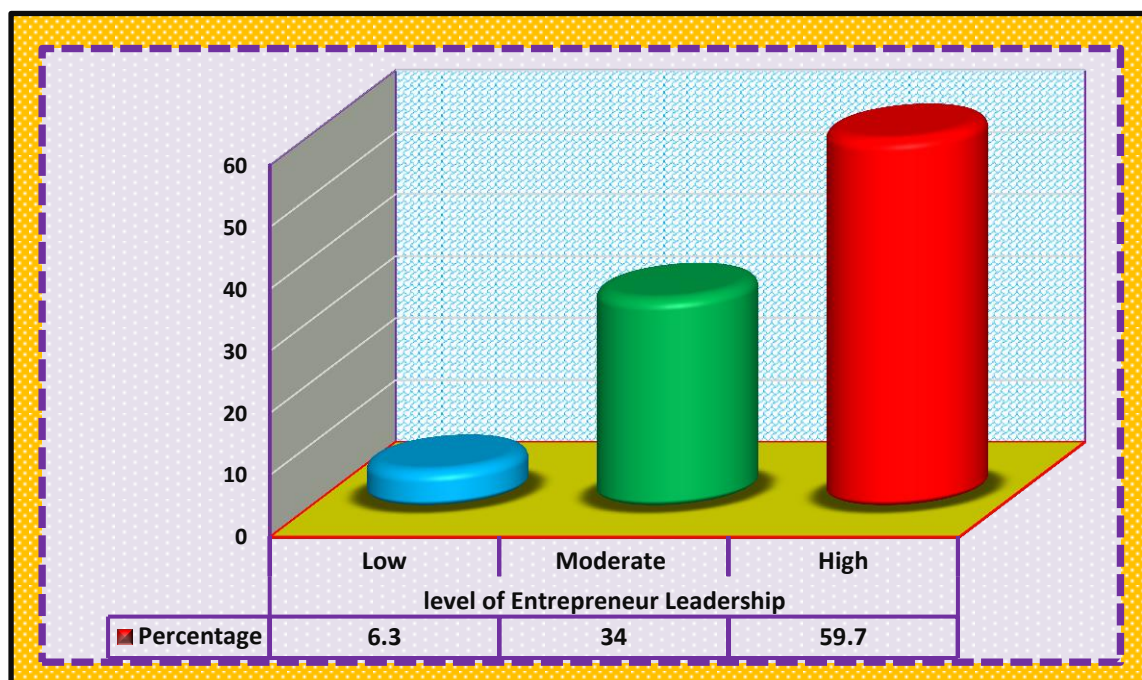
Entrepreneurial leadership Dimensions	Min	Max	$\bar{x} \pm SD$	M %	Rank	P value
Risk taking	13	30	22.03 ± 3.1	73.4	7 th	0.000**
Pro activeness	9	25	19.36 ± 2.7	77.4	3 rd	0.000**
Innovation	20	43	34.29 ± 4.2	76.2	4 th	0.000**
Autonomy	17	30	22.60 ± 2.6	75.3	5 th	0.000**
Competitive aggressiveness	13	29	22.50 ± 3.3	75.0	6 th	0.000**
Ownership	31	51	42.73 ± 4.2	77.7	2 nd	0.000**
Self confidence	10	20	16.14 ± 2.4	80.7	1 st	0.000**
Total	113	228	179.6 ± 22.6	76.4	-	0.000**

*Significant p < 0.05

F: ANOVA Test

**Highly significant p < 0.01

Figure (1): Percentage distribution of studied nurses' total perception level regarding entrepreneurial leadership (n= 300)



$\chi^2=128, P= 0.001^{**}$

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Table (3): Mean score of total innovative work behavior dimensions among studied nurses (n= 300)

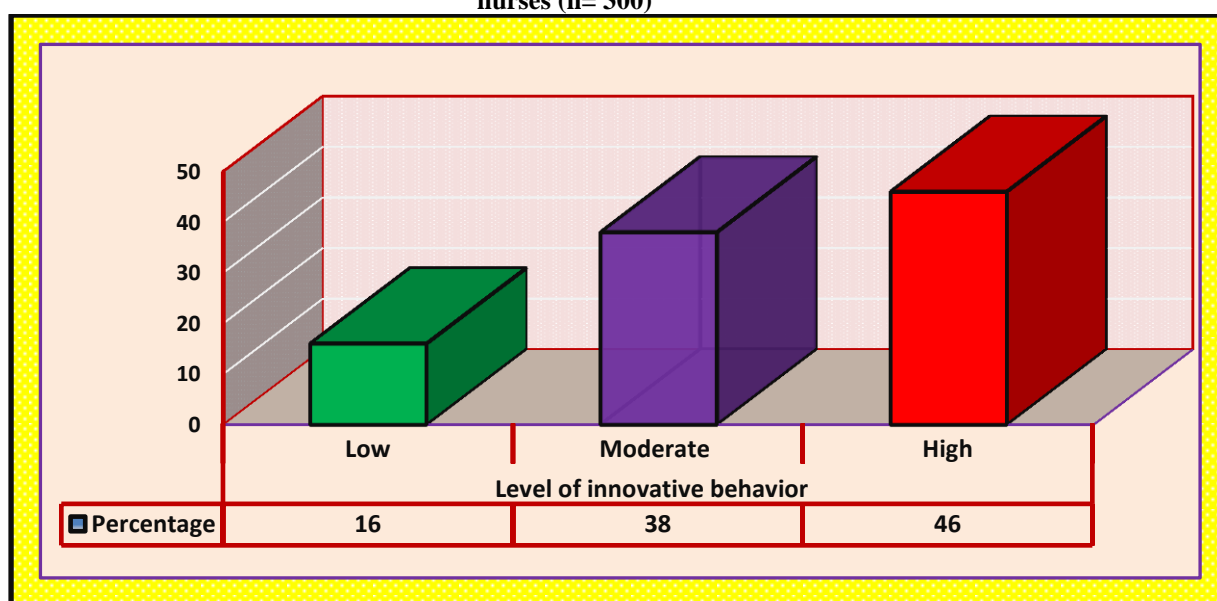
Innovative work behavior dimensions	Min	Max	$\bar{x} \pm SD$	M %	Rank	P value
Idea generation	6	15	10.97 ± 1.82	73.1	5 th	0.000**
Idea search	4	15	11.34 ± 2.41	75.6	3 rd	0.000**
Idea communication	7	20	15.31 ± 2.40	76.5	2 nd	0.000**
Implementation starting activities	7	15	11.20 ± 1.93	74.7	4 th	0.000**
Involving others	3	15	11.83 ± 2.23	78.8	1 st	0.000**
Overcoming obstacles	6	20	14.09 ± 2.78	70.5	6 th	0.000**
Innovation outputs	4	15	10.08 ± 2.28	67.2	7 th	0.000**
Total	37	115	84.81 ± 15.61	73.7	---	0.000**

*Significant $p \leq 0.05$

F: ANOVA Test

**Highly significant $p \leq 0.01$

Figure (2): Percentage distribution of level of total innovative work behavior among studied nurses (n= 300)



$\chi^2=43.4, P= 0.001**$

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Table (4): Linear regression analysis of total entrepreneurial leadership effect on innovative work behavior among studied nurses (n= 300)

Model	Unstandardized coefficients		Standardized coefficients	T Test	P Value	r	r Square	F	P Value
	β	Std. Error	Beta						
Entrepreneurial leadership	0.686	0.004	0.995	165	0.000	0.995	0.989	27509	0.000**
a. Dependent variable: Total score of innovative behavior									
b. Independent variable (constant): Total score of entrepreneurial leadership									

Discussion:

Nurses are becoming the drivers and leaders in population health management, helping to facilitate equal access to healthcare services and therefore well-positioned to consider new work, technology initiatives, and ways of working and thinking to support the healthcare system (Jakobsen et al.,2021). Entrepreneurial leadership is able to delegate responsibility, make and implement choices, and operate independently and contribute to enhancing innovative work behavior that has a positive characteristics on nurses' performance (Akeel et al.,2023). Certainly, nurses face global shifts in the healthcare sector, the nursing field, and novel prospects for innovative work behavior. These opportunities facilitate nurses' personal and professional growth by enabling them to establish enterprises or innovate new equipment for patient care (Thepna et al., 2023). Therefore, the present study was conducted to assess the relation between entrepreneurial leadership and

innovative work behavior among nurses at Menoufia University Hospital. Through answering the following questions; the 1st question was "What is the level of nurses perception regarding entrepreneurial leadership at Menoufia University Hospital?", the 2nd question was " What is the level of innovative work behavior among studied nurses at Menoufia University Hospital? " and the 3rd question was, " What is the relation between entrepreneurial leadership and innovative work behavior among studied nurses at Menoufia University Hospital?" Discussion of the study results is presented in the following sequence; the first part concerned with personal data of studied nurses, the second part concerned with the level of nurses perception regarding entrepreneurial leadership, the third part concerned with the level of innovative work behavior among studied nurses, finally, the fourth part concerned with the correlation between entrepreneurial

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leadership and innovative work behavior.

Part (I): Frequency distribution of studied nurses' personal data.

Concerning to personal characteristics of studied nurses, the current study demonstrated that nearly two-thirds of studied nurses were female, nearly two-thirds of them were married. From the investigator point of view, increasing number of female participants may regard to increasing female to male ratio in nursing career. As well as, recently, faculty of nursing begins to have male students.

Moreover, the assignment of graduated nurse is in university hospitals, because central hospitals and health units has a sufficient number of nurses. Considering age, more than one-half of the age of the studied nurses was ranged from 20 < 30 years old. Regarding to years of experience, more than two-fifths had experience in nursing field lasting between 2 < 5 years of experiences. Concerning level of education, nearly two-thirds were holding a certificate of Bachelor of nursing degree.

Part (II): The level of nurses perception regarding entrepreneurial leadership

This answers the first question "What is the level of nurses perception regarding entrepreneurial leadership at Menoufia University Hospital? "

The finding of the current study revealed that more than-half of studied nurses had a high perception level of entrepreneurial leadership of their head nurses, followed by more than one-

third of them had a moderate level. While, the minority of studied nurses had a low level. From the investigator point of view, this might be due to increasing head nurses' awareness of leadership styles including entrepreneurial leadership and its effect on increasing quality of staff nurse performance and ability to achieve assigned duties and affecting quality of patient care outcome positively. So, they prefer to practice such entrepreneurial behavior with her / his staff.

Also, this may return to that Menoufia University Hospital provide variety of training and educational programs about leadership and management skills through continuing educational department. Furthermore, the vast majority of nurses working in Menoufia University Hospital had a bachelor's degree of nursing and a number of them hold master' degree. Moreover, nursing curricula include variety of topic about management and leadership styles and its effect on subordinates and organization as a whole. All of above- mentioned reasons improved their knowledge of leading roles and assisted them to carry out their effective leadership practice.

This finding was in agreement with Mohamed et al., (2023) who adopted descriptive, correctional study to determine the relation between entrepreneurship head nurses' characteristics and their leadership practices among head nurses at Minia university hospitals. The study's findings demonstrated that more than fifty of the studied head nurses have

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entrepreneurship characteristics. The study's findings demonstrated that more than two-thirds of the studied head nurses have entrepreneurship characteristics. Also, the result was in the same line with the discoveries made by Dehghanzadeh et al., (2016), it was determined that a significant portion of the nurses possess high and moderate entrepreneurial skills. Afsar et al., (2017) found that survey participants had a favorable perception of the role of entrepreneurial leadership and recognized its significance.

The results with in the same line with Jakobsen et al., (2021) found that the majority of nurses could be characterized as entrepreneurs' profession of nursing is primed with content and contextual knowledge to create entrepreneurial initiatives. The results of present study were in congruence with Dehghanzadeh & Neamatzadeh (2013) who assess entrepreneurship psychological characteristics of Nurses in the Shahid Sadoughi Hospital, Yazd, Iran who found that the majority of the nurses strong entrepreneurship characteristics. In contrary, this finding contradicts the findings of Wardan et al., (2020) who conducted descriptive, correlational study between entrepreneurial leadership and work innovation at Port Said hospitals, demonstrate that approximately 50% of nurse managers lack entrepreneurial traits. And in contradictory to the study of Akeel et al., (2023) who conducted a descriptive, correctional study the relation between entrepreneurial leadership and work engagement

among nurse managers, reflect that less than half of studied nurse managers had high total level of entrepreneurial leadership, while less than one third had total moderate level and less than one fifth had total low level.

Part (III): The level of innovative work behavior among studied nurses.

This part answers the second research question "What is level of innovative work behavior among studied nurses at Menoufia University Hospital?"

The finding of the current study found that nearly half of studied nurses had a high level of innovative work behavior, followed by more than one-third of them had a moderate level. While the minority of studied nurses had a low level. From the investigator point of view, this finding could be attributed to that nurses are gaining experience to manage problems and to find more innovative and creative ways to solve it from different situations they exposed at workplace especially with increasing years of experience. As current study result revealed that more than two-fifths of them had experience in nursing field lasting between 2 < 5 years. So, they have enough years of experience to face any problem and manage different or unusual situations. Also, fair, healthy and peaceful workplace organizational culture may be reasons for high level of innovative work behavior.

In addition, another rationals for this may be related to some nurses are allowed to share in decision making

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process and head nurses in some units act as a role model for nurses in managing problems. Furthermore, organizational support such as providing orientation to increase clarity of assigned tasks, training, educational and retraining courses for nurses, fair system of reward and punishment and holding continuous performance evaluation, and delegating authority to nurses based on their abilities and capabilities promote nurses innovative work behavior. Furthermore, nursing curricula include topics learning students how to increase and promote productivity as evidence-based research.

The present study finding was in the same line with Mostafa & Mahfouz, (2021) which clarified that nurses had a high perception level regarding innovative work behavior. This may be due to highly motivating environment, increase autonomy level of nurses and nurse managers provide support to their nurses. The current results also was confirmed by the study of El-Sayed et al., (2022) who study " the relationship between workforce agility and nurses' innovative work behavior at critical care units" revealed that nurses had high level of innovative work behavior.

The result of present study was in consistent with Ahmed et al., (2019), who adopted study to determine "the relation between the leadership behaviors, organizational climate, and innovative work behavior among nurses" and reported that nurses had a high level regarding innovative work behavior. Transformational leadership was the most predictor type of

innovative work behavior. Also, there was a significant and positive correlation between organizational climate and innovative work behavior. Similar, The finding of the present study was in the same direction with El Desoky et al.,(2021) who conducted study about" organizational culture, individual innovative work behavior and their relation to nurses' work engagement" stated that nurses had a high level of innovative work behavior due to their knowledge and experience to generate and apply new ideas and solutions to their problems.

In contrast, the results of El-sewefy et al., (2023) who conducted a descriptive and correctional research study about head nurses' mindfulness and its' relation to their nurses' Innovative Work Behavior illustrated that near to half of nurses had a moderate level regarding innovative work behavior, whenever, less than half of nurses had high level regarding innovative work behavior and less than one fifth of them had low level of innovative work behavior.

Also, In contrary, Sayied & Ahmed,(2017) who studied "innovation behavior levels and its relation with TIGER-based nursing informatics competencies among critical care nurses" stated that nurses had a moderate level of innovative work behavior. Furthermore, Elsayed et al., (2020) who conducted study about" the role of work locus of control and inclusive leadership on nurses' innovative work behavior" disagreed with the present study result and stated that nurses had a moderate level of innovative work behavior.

Part IV: The correlation between the variables under the study (entrepreneurial leadership and innovative work behavior)

This part answers the third research question What is the relation between entrepreneurial leadership and innovative work behavior among nurses at Menoufia University Hospital?.

The finding of the current study demonstrated that there was a highly statistically significant positive strong correlation between total score of entrepreneurial leadership and total score of innovative work behavior among studied nurses and illustrates that more than-half and more than two-fifths of studied nurses had a high perception level of entrepreneurial leadership and innovative work behavior respectively there was a highly statistically significant positive strong correlation between dimensions of entrepreneurial leadership (Risk taking, pro-activeness, innovation, autonomy, competitive aggressiveness, ownership, and self-confidence) and dimensions of innovative work behavior (Idea generation, idea search, idea communication, implementation starting activities, involving others, overcoming obstacles and innovation outputs) among studied nurses.

From the investigator point of view, this may regard to increasing head nurses' entrepreneurial practices create an environment in which nurses become able to perform well, manage problem they faced and affect their productivity positively. Also, continuous entrepreneurial practice of

head nurses consume their energy in meaningful practices and create a positive workplace where nurses can do their tasks well and face any problem and be more creative and intuitive to manage their work and increased their attention to their nurses and environment that affect their nurses ability to generate and apply novel ideas. This could be related to their ability to create a promising environment and encouraging culture in which all of nurses consider innovation as one of their priority tasks and show their persistence in the face of challenges inherited in nursing care process.

At the same line, the result of Li et al., (2020) who studied impact of entrepreneurial leadership on innovative work behavior in China and found that around two fifths of entrepreneurial leaders had high level of innovation and there is a strong correlation between entrepreneurial leadership on innovative work behavior. In agreement with, Nehal & Mahmoud, (2021) who conducted study about "measuring the impact of entrepreneurial leadership on innovative work environment within Egyptian travel agencies." It revealed that there is a highly positive correlation between entrepreneurial leadership and travel agency's innovative environment.

In accordance with current finding, Wardan et al., (2020) who conducted descriptive, correlational study between entrepreneurial leadership and innovative work behavior at port Said hospitals revealed that there was strongly statistically significant

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correlation between nurse managers' total scores characteristics of entrepreneurial leadership and the total scores innovative work behavior. Also, the current study finding was supported by Ndubisi, (2012) who study the relationship between entrepreneurship, innovation and performance: Comparing small and medium-size enterprises. The results indicate a significant direct relationship between entrepreneurship and innovation.

Similarly, the present finding was in the same direction with El-sayed et al., (2022) who conducted a descriptive and correctional research study about innovative work behavior and its relation to knowledge sharing among nurses at Zagazig university hospitals revealed that there was significant association between innovative work behavior and knowledge sharing. Furthermore, nurse' innovative work behavior was a positive significant predictor of knowledge sharing and increased at the same line with increase knowledge sharing.

Conclusion:

In the light of the current study finding, the study emphasized that, more than half of studied nurses had high level of entrepreneurial leadership and more than two-fifth of them had high level of innovative work behavior while, the minority of them had low level of both entrepreneurial leadership and innovative work behavior. Moreover, there was a highly statistical significance positive strong correlation between entrepreneurial leadership and innovative work

behavior among studied nurses. In addition, regression, coefficient of the independent variable (entrepreneurial leadership) revealed that entrepreneurial leadership is a positive predictor factor of innovative work behavior among studied nurses.

Recommendations:

Based on the findings of this study, the following recommendations are proposed: Hospital administrators should:

- Build an atmosphere of confidence, a culture of organizational identifications, loyalty, similarity, and membership among nurses by fostering, adopting the fair practices like operating in an environment of openness and honesty, stressing a conflict-free workplace, and encouraging a sense of justice among all staff
- Strength their leadership abilities by attracting and retaining leaders who act on their own to complete their tasks and assist other staff.
- Improve the organizational reputation and competitiveness by considering an effective leadership style.
- Adopt an open-door policy to overcome work problems.
- Contribute more actively and significantly in achieving innovative work behavior among nurses.
- Conduct effective communication and promote cooperation among all nursing staff, leaders, and management.
- Conduct frequent meetings with nurses who have problems in their job to help and encourage them.

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- Replication of the study with a larger sample of nurses from different hospitals in different regions of the country to ascertain generalizability of the findings.

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