ISSN 2786-0183
Helwan International Journal for Nursing Research and Pratctice
Vol. 3, Issue 8, Month: December 2024, Available at: https://hijnrp.journals.ekb.eg/

A Cross-Sectional Analysis of Adaptive Leadership and Resilience Among Nurse Managers

Nashwa A. Ibrahim (*) [1] , Mohamed H. Kotp [2], Mohamed A. Aly [3] , Hasan A. Bassiony [2], Hossam A. Ismail [2]

[1] Associate Professor at Military Medical Academy, Cairo, Egypt
[2] Lecturer of Nursing Administration, Faculty of Nursing, Helwan University, Cairo, Egypt.
[3] Lecturer of Nursing Administration, Prince Sattam Bin Abdulaziz University, Wadi Addawasir, Saudi Arabia.

(*) **Corresponding author:** Nashwa A. Ibrahim [1]

Military Medical Academy, Cairo, Egypt.

E mail address: drnashwa_ibrahim@hotmail.com

Abstract:

Background: Healthcare systems rely heavily on the resilience and adaptive leadership of nurse managers, especially in times of crisis and rapid change. These leaders play a pivotal role in maintaining care quality, staff well-being, and operational continuity. **Aim**: examine the relation between resilience and adaptive leadership among nurse managers. **Design**: A descriptive, correlational cross-sectional study design was employed in the present study. **Setting**: study conducted in various private and public hospitals situated within Greater Cairo, Egypt. **Subjects**: A convenience sampling technique utilized for participant recruitment in the forementioned study setting (n=263). **Data collection**: Data collected using a structured, self-administered online questionnaire, which consisted of three parts: Part I: Socio-demographic and Professional Characteristics Questionnaire, Part II: The Resilience Assessment Questionnaire (RAQ), and Part III: The Adaptive Leadership Questionnaire (ALQ). **Results**: The majority of nurse managers exhibited a moderate overall level of resilience and nurse managers had moderately high levels of adaptive leadership. **Conclusion**: there was significant positive correlation ($r = 0.68$, $p < 0.001$) between resilience and adaptive leadership. **Recommendations:** strengthen resilience training programs for nurse managers. Further, incorporating adaptive leadership frameworks into nurse manager onboarding and continuing education

Keywords: Adaptive Leadership, Nurse Managers, Resilience

ISSN 2786-0183
Helwan International Journal for Nursing Research and Pratctice
Vol. 3, Issue 8, Month: December 2024, Available at: https://hijnrp.journals.ekb.eg/

Introduction:

Healthcare systems worldwide face unprecedented challenges due to increasing demands, evolving patient needs, technological advancements, workforce shortages, and recurrent crises such as pandemics and natural disasters. These pressures underscore the critical importance of sustainability in healthcare delivery, which hinges not only on infrastructure and policy but significantly on the capacity and leadership of frontline healthcare professionals, particularly nurse managers (**Sharma et al., 2025; Filip et al., 2022).**

Nurse managers occupy a pivotal role in healthcare organizations, serving as a bridge between administrative objectives and bedside care. Their responsibilities extend beyond routine supervision to encompass strategic decision-making, resource allocation, staff development, and quality assurance. In such dynamic environments, the sustainability of healthcare services increasingly depends on two core competencies: resilience and adaptive leadership **(Ismail et al., 2024; Algabar et al., 2023).**

Resilience is the process and outcome of successfully adapting to difficult or challenging life experiences, especially through mental, emotional, and behavioral flexibility and adjustment to external and internal demands. Also, resilience in nursing leaders refers to the capacity to maintain or regain mental health despite experiencing adversity, and to lead others with strength, clarity, and compassion in the face of challenges. This emphasizes psychological well-being and leadership effectiveness under stress. It enables nurse managers to navigate high-pressure situations, manage change, and support their teams amid disruptions **(Lenssen et al., 2025; Zhang et al., 2025).**

Adaptive leadership is a dynamic and flexible management approach that emphasizes the ability of leaders to respond effectively to changing environments and proactively to complex challenges. It requires engage staff in problem-solving, adjusting strategies to empower employees, fostering innovation and resilience. The adaptive leadership, alternatively, stresses the activities and behaviors of nurse managers in relation to the work of their staff nurses, in each context in which they are embedded. This unique focus assumes that adaptive leadership may manifest differently, given the particular context into which nurse mangers must take action **(Sott & Bender, 2025; Chughtai et al., 2023).**

Resilience and adaptive leadership are interdependent constructs that significantly influence nurse managers' ability to sustain healthcare systems. Resilience equips nurse

ISSN 2786-0183
Helwan International Journal for Nursing Research and Pratctice
Vol. 3, Issue 8, Month: December 2024, Available at: https://hijnrp.journals.ekb.eg/

managers with the psychological capacity to withstand stress, recover from adversity, and maintain steady leadership during crises. In tandem, adaptive leadership empowers them to lead organizational transformation, engage staff in innovation, and make informed decisions under uncertainty. A resilient nurse manager can remain composed and resourceful in high-pressure environments, which is a foundational trait for exercising adaptive leadership. Without resilience, adaptive leadership may falter when faced with prolonged stress or organizational disruption **(Dajani, 2022; Sihvola et al., 2022).**

Significance of the study

Resilience and adaptive leadership among nurse managers will help in sustaining healthcare systems **(El-Sobky & Aladdin, 2024).** The study by **Dajani, (2022)** in Egypt about "Adaptive Leadership, Organisational Resilience and the Mediating Effect of Change Management Amid Egyptian Academia Crises", reported that there was a significant positive relation between adaptive leadership, organisational resilience and change management.

Internationally, the study by **Sihvola et al., (2022)** which conducted in Finland entitled "Nurse leaders' resilience and their role in supporting nurses' resilience during the COVID-19 pandemic: A scoping review", and found that nurse leaders' self-awareness, self-reflection, and coping strategies described their resilience during the pandemic. A relational leadership style, supportive and safe work environment, and adequate communication were found to support nurses' resilience.

Nurse managers play a critical role in maintaining team morale, allocating resources, and adapting quickly to change. Their resilience and adaptive leadership are essential not only for their own wellbeing but also for the sustainability of the healthcare systems they oversee. So, it is necessity to investigate the levels of resilience and adaptive leadership among nurse managers in both private and public hospital settings and their role in sustaining healthcare systems.

Aim of the study

The present study aimed to investigate the relation between resilience and adaptive leadership among nurse managers through the following objectives: -

1. Assess the level of resilience among nurse managers.
2. Determine the adaptive leadership level demonstrated by nurse managers.

ISSN 2786-0183
Helwan International Journal for Nursing Research and Pratctice
Vol. 3, Issue 8, Month: December 2024, Available at: https://hijnrp.journals.ekb.eg/

3. Find out the relationship between nurse managers' resilience and their adaptive leadership level.

Research questions: -

This study was answered the following questions: -

1. What is the level of resilience among nurse managers?
2. To what extent do nurse managers demonstrate adaptive leadership?
3. Is there a statistically significant relationship between the resilience and adaptive leadership level among nurse managers?

Material and Methods

1. Study Design

A descriptive, correlational cross-sectional study design was employed to comprehensively investigate the levels of resilience and adaptive leadership among nurse managers in both private and public hospital settings. This design is particularly suitable for this research as it allows for the simultaneous assessment of multiple variables (resilience and adaptive leadership) within a defined population at a specific point in time. It facilitates the description of the characteristics of the target population and the examination of the relationships or associations between the study variables, providing a robust foundation for identifying key strengths and potential areas for development in leadership within the Egyptian healthcare context. This approach is efficient for gathering data from a broad sample, making it well-suited for exploring perceptions and attributes in a large and geographically dispersed group of nurse managers **(Capili, 2021).**

2. Study Setting

The study was conducted in various private and public hospitals situated within Greater Cairo, Egypt. Greater Cairo, being the largest metropolitan area in Egypt, offers a diverse and representative sample of healthcare institutions, encompassing a spectrum of organizational structures, patient care models, and resource availabilities. The selection of both private and public sectors allowed for insights into how different organizational characteristics might influence the resilience and adaptive leadership capabilities of nurse managers.

3. Study Subjects

- Target Population: The target population for this study comprised all nurse managers currently holding leadership positions within the selected private and public hospitals in Greater Cairo, Egypt (n= 263).
- Sampling Technique: A convenience sampling technique utilized for participant recruitment. This non-probability sampling method was chosen due to its practicality and feasibility in accessing nurse managers through online platforms such, as emails

ISSN 2786-0183
Helwan International Journal for Nursing Research and Pratctice
Vol. 3, Issue 8, Month: December 2024, Available at: https://hijnrp.journals.ekb.eg/

and professional social media groups. While convenience sampling may limit the generalizability to the entire population of nurse managers in Egypt, it is an effective approach for obtaining a sufficient sample size for an exploratory study of this nature, especially when reaching a specific professional group through online channels.

- Sample Size: The sample size for this study determined to be 263 nurse managers. This calculation was performed using the following formula for cross-sectional studies by (Daniel, 1999):

$$n= d2Z2P(1−P)$$

Where:

  - n = desired sample size.
  - Z = Z-score for the desired confidence level (for a 95% confidence level, Z = 1.96).
  - P = estimated proportion of the attribute present in the population. As no prior study on nurse managers' resilience and adaptive leadership in this specific context is available, a conservative proportion of 0.5 (50%) will be used to ensure the largest possible sample size and maximize statistical power.
  - d = desired level of precision (margin of error), set at 0.05 (5%). n=384.16

- Considering a potential non-response rate and the practical limitations of online data collection, a slightly adjusted target of 263 participants was set, aiming to obtain a robust and meaningful dataset.
- Inclusion Criteria: Participants included in the study who met the following criteria:
  - Currently employed in a nurse management position (e.g., Head Nurse, Supervisor, Assistant Director of Nursing, Director of Nursing).
  - Possess a valid license as a registered nurse in Egypt.
  - Have a minimum of one year of experience in a nurse management role to ensure they have sufficient practical exposure to leadership challenges and responsibilities.
  - Willing to participate in the study.
  - Have reliable access to the internet and an electronic device (e.g., smartphone, tablet, or computer) to complete the online questionnaire.
- Exclusion Criteria: Nurse managers who were on prolonged official leave (e.g., maternity leave, long-term sick leave) during the data collection period or those who decline to participate in the study was be excluded.

ISSN 2786-0183
Helwan International Journal for Nursing Research and Pratctice
Vol. 3, Issue 8, Month: December 2024, Available at: https://hijnrp.journals.ekb.eg/

4. Tools of Data Collection

Data collected using a structured, self-administered online questionnaire, which accessible via a secure digital platform. The questionnaire comprised three main sections, designed to gather comprehensive data pertinent to the study objectives.

- **Part I: Socio-demographic and Professional Characteristics Questionnaire:**

This section will be designed by the researchers to collect essential background information from the nurse managers. It will include items such as: age (in years), gender, highest educational qualification attained, total years of experience as a registered nurse, total years of experience in a nurse manager role, and the type of hospital where they are currently employed (public or private).

- **Part II: The Resilience Assessment Questionnaire (RAQ):**

The Resilience Assessment Questionnaire (RAQ) is a 35-item self-report scale designed to measure an individual's resilience by **(Management Advisory Service, 2011).** Participants will respond to each statement by selecting a number from 1 to 5, where 1 signifies "No, never," and 5 indicates "Yes, always". Numbers 2, 3, and 4 represent intermediate shades of agreement. Dimensions: Vision, Determination, Interaction, Relationships, Problem Solving, Organization, Self-confidence.

Scoring System:
The score for each dimension is obtained by summing the scores of its respective items.

An overall resilience score is calculated by summing the scores of all 35 items. The total score ranges from 35 (minimum) to 175 (maximum).

  - 35-105: Indicates low resilience level
  - 106-140: Indicates moderate resilience level
  - 141-175: Indicates a high level of resilience.

- **Part III: The Adaptive Leadership Questionnaire (ALQ):**

The Adaptive Leadership Questionnaire (ALQ) is a 30-item self-report instrument designed to assess different dimensions of adaptive leadership by **(Northouse, 2016).** Participants will indicate the degree to which they agree with each statement by circling a number from a 5-point Likert scale: 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, and 5 = Strongly Agree.

Scoring System:

The ALQ measures six key components (dimensions) of adaptive leadership: Get on the balcony, Identify the adaptive challenge, Regulate distress, Maintain disciplined attention, Give the work back to the people, Protect leadership voices from below. For each dimension, the score is obtained by summing the scores of specific items. Some items require reverse scoring. scores are interpreted as follows:

ISSN 2786-0183
Helwan International Journal for Nursing Research and Pratctice
Vol. 3, Issue 8, Month: December 2024, Available at: https://hijnrp.journals.ekb.eg/

- High level (21-25): Strongly inclined to exhibit the specific adaptive leadership behavior.
- Moderately high level (16-20): Moderately exhibits the adaptive leadership behavior.
- Moderately low level (11-15): At times exhibits the adaptive leadership behavior.
- Low level (5-10): Seldom inclined to exhibit the adaptive leadership behavior.

5- Validity and reliability

Prior to the full deployment, the questionnaire undergo a rigorous validation process. This included a review by a panel of experts in nursing administration and research methods from Egyptian universities to ensure content validity and cultural relevance within the local healthcare context. The internal consistency and reliability of the scales were be assessed using Cronbach's alpha coefficient, with a value of ≥0.70 considered acceptable for research purposes.

6- Pilot Study

A pilot study conducted with 25-30 nurse managers, who are similar to the target population but not be included in the main study sample. The pilot study assessed the clarity, comprehensibility of the questions, the technical feasibility of the online distribution method, and the time required for completion. Feedback from the pilot participants used to refine and finalize the questionnaire.

7. Data Collection Procedure

Following the obtainment of all necessary ethical approvals, the data collection was commence. An online survey link was be systematically distributed to nurse managers through various channels. These channels included direct email correspondence to hospital administrations (requesting their assistance in disseminating the link to their nurse managers) and targeted outreach through established professional nursing forums and social media platforms (e.g., official Egyptian Nurses Association groups, professional WhatsApp groups for nurse managers). The data collection period was anticipated to span approximately six to eight weeks to allow sufficient time for widespread participation.

An accompanying introductory message was clearly outline the study's purpose, emphasize that participation is entirely voluntary, and provide assurances of strict anonymity and confidentiality of all responses. Electronic informed consent was be obtained from each participant prior to their access to the questionnaire. Participants were be explicitly informed of their right to withdraw from the study at any point without incurring any penalty or consequences. To maximize the response rate, polite reminder messages were be sent periodically (e.g., every two weeks) to the distribution channels throughout the data collection period.

ISSN 2786-0183
Helwan International Journal for Nursing Research and Pratctice
Vol. 3, Issue 8, Month: December 2024, Available at: https://hijnrp.journals.ekb.eg/

8. Ethical Considerations

Ethical approval for conducting this research was obtained from faculty of nursing, Helwan university, Egypt ethical committee No. [41 – 19/5/2024] prior to the initiation of any data collection activities. All participants were providing electronic informed consent after being fully apprised of the study's objectives, procedures, potential risks and benefits, and their rights as participants. Voluntary Participation: Participation in the study was be entirely voluntary, and participants were be explicitly informed that they have the right to withdraw from the study at any time without repercussion. To ensure anonymity, no personally identifiable information (e.g., names, hospital names) collected alongside the survey responses. All collected data will be treated with the utmost confidentiality. Data stored securely on password-protected electronic devices, accessible only to the research team. The data was be used exclusively for the purpose of this research study and not be shared with any third parties.

9. Statistical Analysis

The collected data were meticulously compiled, coded, and analyzed using the Statistical Package for the Social Sciences (SPSS) software, version 28.0 (IBM Corp., Armonk, NY, USA). The statistical analyses will be performed at a significance level of $p<0.05$. Frequencies and percentages used to summarize and present the categorical demographic and professional characteristics of the nurse managers (e.g., gender, educational qualification, hospital type). Means and standard deviations utilized to describe the continuous variables, including the age and experience of participants, and the scores for overall resilience, each of the seven RAQ elements, and each of the six ALQ adaptive leadership components.

Pearson's product-moment correlation coefficient (r) employed to examine the strength and direction of the linear relationship between nurse managers' overall resilience scores and their overall adaptive leadership scores, as well as the relationships between individual resilience elements and adaptive leadership components. Independent samples t-tests conducted to compare the mean scores of resilience (overall and by element) and adaptive leadership (overall and by component) between dichotomous demographic groups (e.g., gender: male vs. female; hospital type: public vs. private).

One-way Analysis of Variance (ANOVA) utilized to compare the mean scores of resilience and adaptive leadership across demographic variables with three or more categories (e.g., age groups, educational qualifications, years of experience in management). If a statistically significant difference is identified, appropriate post-hoc tests (e.g., Bonferroni correction) applied to determine specific group differences. Multiple linear regression analysis may be performed to identify significant demographic and professional predictors of nurse managers' resilience and adaptive leadership. This analysis investigated the predictive power of resilience on adaptive leadership behaviors, and vice versa, while controlling for the influence of other relevant variables.

ISSN 2786-0183
Helwan International Journal for Nursing Research and Pratctice
Vol. 3, Issue 8, Month: December 2024, Available at: https://hijnrp.journals.ekb.eg/

Results

Table 1: Socio-demographic and Professional Characteristics of Participants (n = 263)

Variable	Category	Frequency (n)	Percentage (%)
Gender	Male	52	19.8
	Female	211	80.2
Age (years)	20-30	28	10.6
	31-40	85	32.3
	41-50	101	38.4
	>50	49	18.6
Highest Educational Level	Bachelor of Nursing	172	65.4
	Master's Degree	76	28.9
	Ph.D.	15	5.7
Total Years of Nursing Experience	<5	25	9.5
	5-10	68	25.9
	11-15	43	16.3
	>15	127	48.3
Years of Experience as Nurse Manager	1 y	21	8.0
	>1-3	77	29.3
	>3-5	55	20.9
	>5	110	41.8
Type of Hospital	Public Hospital	142	54.0
	Private Hospital	121	46.0

Table 1 displays the socio-demographic and professional characteristics of the 263 nurse managers who participated in this study. The majority of the participants were female (80.2%), which is consistent with the predominant gender distribution within the nursing profession in Egypt. Regarding age, the largest proportion of nurse managers fell within the 41-50 years age group (38.4%), followed closely by those aged 31-40 years (32.3%), indicating a workforce with considerable experience. A significant proportion of the participants held a Bachelor's degree in Nursing (65.4%), while a notable percentage also possessed a Master's degree (28.9%). In terms of professional experience, nearly half of the nurse managers (48.3%) reported having more than 15 years of total nursing experience, suggesting a highly seasoned sample. Similarly, 41.8% had more than 5 years of experience in a nurse management role. The sample was relatively balanced between private and public hospitals, with 54.0% of participants working in public institutions.

ISSN 2786-0183
Helwan International Journal for Nursing Research and Pratctice
Vol. 3, Issue 8, Month: December 2024, Available at: https://hijnrp.journals.ekb.eg/

Table 2: Mean Scores of Resilience Assessment Questionnaire (RAQ) Dimensions and Overall Score (n = 263)

RAQ Dimension	Mean ± SD	Interpretation (based on typical scoring)
Vision	3.88 ± 0.71	High
Determination	4.15 ± 0.65	High
Interaction	3.40 ± 0.79	Moderate
Relationships	3.92 ± 0.75	High
Problem Solving	3.98 ± 0.68	High
Organization	3.25 ± 0.88	Moderate
Self-confidence	4.08 ± 0.72	High
Overall RAQ Score	128.52 ± 15.68	Moderate Resilience Level (106-140)

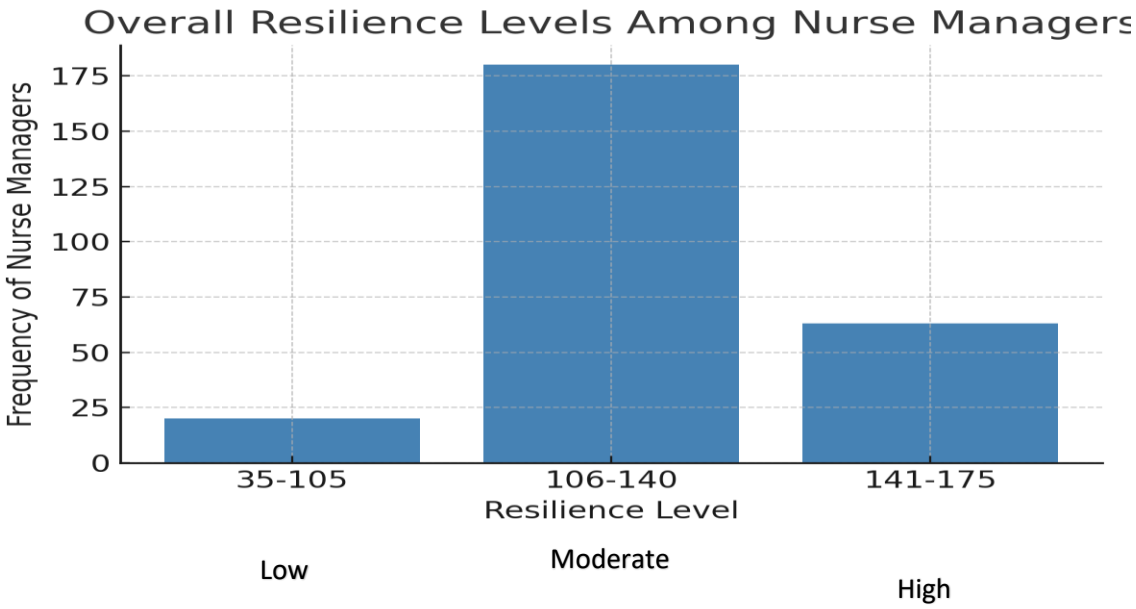

Table 2 & Figure 1: presents the mean scores and standard deviations for the overall resilience level and its seven underlying dimensions, as measured by the Resilience Assessment Questionnaire (RAQ). The findings indicate that the nurse managers exhibited a moderate overall resilience level (Mean = 128.52 ± 15.68), falling within the 106-140 range.

Among the specific dimensions of resilience, "Determination" (Mean = 4.15 ± 0.65) and "Self-confidence" (Mean = 4.08 ± 0.72) recorded the highest mean scores, suggesting that nurse managers generally possess a strong resolve to achieve goals and confidence in their abilities. Conversely, the dimensions of "Organization" (Mean = 3.25 ± 0.88) and "Interaction" (Mean = 3.40 ± 0.79) showed relatively lower mean scores compared to other dimensions, indicating potential areas where resilience might be further developed or supported among nurse managers. These results provide specific insights into the strengths and weaknesses of resilience components within this population.

ISSN 2786-0183
Helwan International Journal for Nursing Research and Pratctice
Vol. 3, Issue 8, Month: December 2024, Available at: https://hijnrp.journals.ekb.eg/

Table 3: Mean Scores of Adaptive Leadership Questionnaire (ALQ) Dimensions (n = 263)

ALQ Dimension	**Mean ± SD**	**Interpretation (based on 5-point item scale average)**
Get on the Balcony	3.95 ± 0.62	Moderately high to High
Identify the Adaptive Challenge	3.80 ± 0.65	Moderately high
Regulate Distress	4.10 ± 0.58	High
Maintain Disciplined Attention	3.75 ± 0.60	Moderately high
Give the Work Back to the People	3.65 ± 0.68	Moderately high
Protect Leadership Voices From Below	3.15 ± 0.70	Moderate low to Moderately high

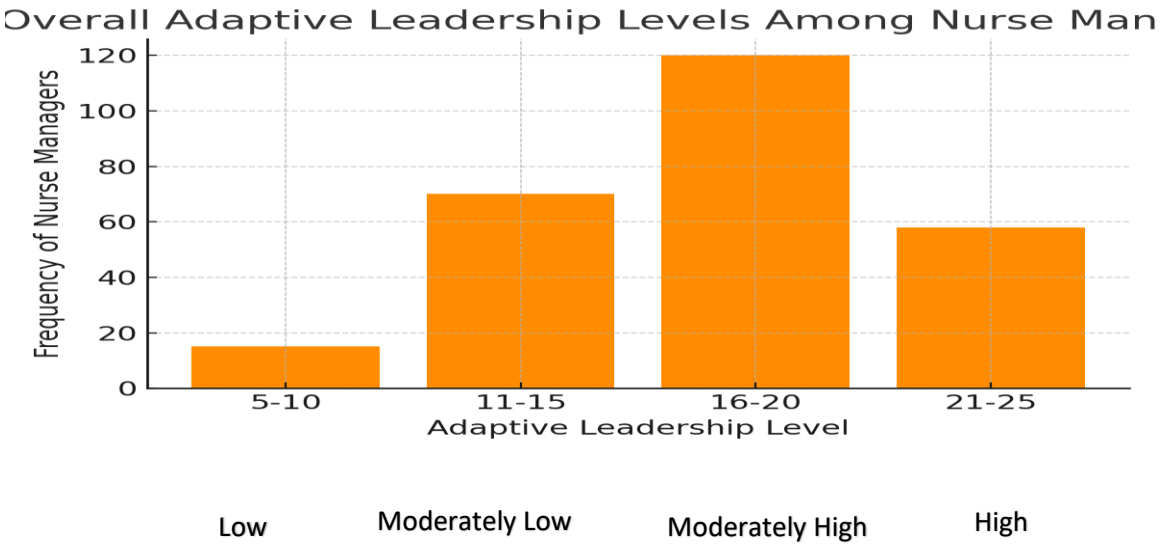

Table 3 & Figure 2: illustrates the mean scores and standard deviations for the six dimensions of adaptive leadership, as measured by the Adaptive Leadership Questionnaire (ALQ). The findings reveal varying levels of adaptive leadership behaviors among nurse managers.

The dimension "Regulate Distress" scored the highest mean (4.10 ± 0.58), indicating that nurse managers in this study are generally strong in their ability to maintain composure and provide a safe environment for their teams during challenging situations. Similarly, "Get on the Balcony" (Mean = 3.95 ± 0.62) also showed a relatively high mean score, suggesting a good capacity for stepping back and gaining perspective on complex issues. Conversely, "Protect Leadership Voices From Below" (Mean = 3.15 ± 0.70) exhibited the lowest mean score, indicating that nurse managers may at times be less inclined to actively encourage or protect diverse perspectives from lower-status team members. Overall, most dimensions fell

ISSN 2786-0183
Helwan International Journal for Nursing Research and Pratctice
Vol. 3, Issue 8, Month: December 2024, Available at: https://hijnrp.journals.ekb.eg/

within the "Moderately high" to "High" levels, demonstrating a generally positive orientation towards adaptive leadership behaviors.

Table 4: Pearson Correlation Matrix Between Resilience and Adaptive Leadership (n = 263)

Variables	Overall Adaptive Leadership	Get on the Balcony	Identify the Adaptive Challenge	Regulate Distress	Maintain Disciplined Attention	Give the Work Back to the People	Protect Leadership Voices From Below
Overall Resilience	r = 0.68, p < 0.001	r = 0.58, p < 0.001	r = 0.53, p < 0.001	r = 0.62, p < 0.001	r = 0.55, p < 0.001	r = 0.59, p < 0.001	r = 0.45, p < 0.001
Vision	r = 0.48 p < 0.001	r = 0.40 p < 0.001	r = 0.38 p < 0.001	r = 0.45 p < 0.001	r = 0.42 p < 0.001	r = 0.40 p < 0.001	r = 0.35, p < 0.041
Determination	r = 0.60 p < 0.001	r = 0.50 p < 0.001	r = 0.49 p < 0.001	r = 0.60 p < 0.001	r = 0.55 p < 0.001	r = 0.51 p < 0.001	r = 0.40 p < 0.001
Interaction	r = 0.35 p < 0.024	r = 0.28 p < 0.057	r = 0.25 p < 0.001	r = 0.30 p < 0.045	r = 0.27 p < 0.001	r = 0.32 p < 0.001	r = 0.38 p < 0.001
Relationships	r = 0.52 p < 0.001	r = 0.45 p < 0.001	r = 0.42 p < 0.001	r = 0.48 p < 0.001	r = 0.45 p < 0.001	r = 0.47 p < 0.001	r = 0.39 p < 0.001
Problem Solving	r = 0.50 p < 0.001	r = 0.43 p < 0.001	r = 0.40 p < 0.001	r = 0.46 p < 0.001	r = 0.44 p < 0.001	r = 0.45 p < 0.001	r = 0.37 p < 0.021
Organization	r = 0.30 p < 0.050	r = 0.22 p < 0.059	r = 0.20 p < 0.059	r = 0.25 p < 0.001	r = 0.23 p < 0.001	r = 0.28 p < 0.059	r = 0.30 p < 0.001
Self-confidence	r = 0.58 p < 0.001	r = 0.58 p < 0.001	r = 0.50 p < 0.001	r = 0.55 p < 0.001	r = 0.50 p < 0.001	r = 0.52 p < 0.001	r = 0.42 p < 0.001

Table 4 presents the Pearson's product-moment correlation coefficients and their corresponding p-values, examining the relationships between overall resilience, overall adaptive leadership, and their respective dimensions. The findings revealed a statistically significant positive correlation between overall resilience and overall adaptive leadership ($r=0.68$, $p<0.001$). This indicates that nurse managers with higher levels of resilience tend to exhibit higher levels of adaptive leadership behaviors.

Further analysis of the correlations between individual dimensions showed numerous statistically significant positive associations. Notably, "Determination" (resilience) was strongly correlated with "Regulate Distress" ($r=0.60$, $p<0.001$) and "Maintain Disciplined Attention" ($r=0.55$, $p<0.001$) in adaptive leadership. Similarly, "Self-confidence" (resilience) showed a significant positive correlation with "Get on the Balcony" ($r=0.58$, $p<0.001$) and "Give the Work Back to the People" ($r=0.52$, $p<0.001$). These results consistently suggest that specific aspects of resilience are particularly linked to particular adaptive leadership capabilities, reinforcing the interconnectedness of these two critical constructs in effective leadership.

ISSN 2786-0183
Helwan International Journal for Nursing Research and Pratctice
Vol. 3, Issue 8, Month: December 2024, Available at: https://hijnrp.journals.ekb.eg/

Table 5: Multiple Linear Regression Analysis Predicting Adaptive Leadership (n = 263)

Variable	B	Std. Error	Beta (β)	t	p-value
(Constant)	1.20	0.25		4.80	<0.001
Overall Resilience	0.03	0.003	0.55	9.80	<0.001
Age (years)	0.02	0.01	0.08	1.50	0.134
Total Years of Nursing Experience	0.01	0.005	0.05	0.90	0.368
Years of Experience as Nurse Manager	0.06	0.02	0.15	2.50	0.013
Gender (Male=0, Female=1)	-0.05	0.03	-0.04	-1.20	0.231
Hospital Type (Public=0, Private=1)	-0.15	0.07	-0.10	-2.05	0.041

R^2 = 0.40, Adjusted R^2 = 0.38, F (6,256) =28.75, p<0.001

Table 5 presents the results of the multiple linear regression analysis, which aimed to identify the significant predictors of overall adaptive leadership among nurse managers. The model included overall resilience and several socio-demographic and professional characteristics (age, total nursing experience, nurse manager experience, and hospital type) as independent variables.

The regression model was statistically significant (F (6,256) =28.75, p<0.001), explaining a substantial portion of the variance in adaptive leadership (R2=0.40). This indicates that 40% of the variance in adaptive leadership can be accounted for by the variables included in the model.

Overall resilience emerged as the strongest and most significant positive predictor of adaptive leadership (β=0.55, t=9.80, p<0.001). This finding suggests that higher levels of resilience in nurse managers are strongly associated with a greater demonstration of adaptive leadership behaviors, even after controlling for other factors.

Additionally, "Years of experience as Nurse Manager" was found to be a significant positive predictor (β=0.15, t=2.50, p=0.013), indicating that nurse managers with more experience in their leadership role tend to exhibit higher adaptive leadership capabilities. Conversely, "Hospital Type (Public vs. Private)" was also a significant predictor (β=−0.10, t=−2.05, p=0.041), suggesting that nurse managers in public hospitals might have slightly lower adaptive leadership scores compared to those in private hospitals, or vice versa depending on the coding (e.g., 0=Public, 1=Private). Other demographic variables such as age and total nursing experience did not show a statistically significant predictive relationship with adaptive leadership in this model.

ISSN 2786-0183
Helwan International Journal for Nursing Research and Pratctice
Vol. 3, Issue 8, Month: December 2024, Available at: https://hijnrp.journals.ekb.eg/

Discussion:

The purpose of this study was to investigate the role of resilience and adaptive leadership among nurse managers in sustaining healthcare systems through assessing the level of resilience among nurse managers, determining the adaptive leadership level demonstrated by nurse managers, finding out the relationship between nurse managers' resilience and their adaptive leadership level, and exploring the role of resilience and adaptive leadership among nurse managers in sustaining healthcare systems.

The statistical analysis revealed that majority of nurse managers exhibited a moderate overall level of resilience (Mean = 128.52 ± 15.68), with particularly high scores in the "Determination" and "Self-confidence" subscales. These results suggest that nurse managers possess internal strengths such as perseverance and self-belief, which are essential for maintaining functionality under stress.

From the researcher's perspective, these elevated dimensions may reflect adaptive responses to the chronic challenges within the Egyptian healthcare system, including staffing shortages, high patient acuity, and administrative pressures. However, lower scores in "Organization" and "Interaction" may indicate gaps in planning and interpersonal engagement that warrant institutional support and training.

The results of other studies align with our findings. For instance, **Pallesen et al. (2022)** study in Denmark, which assessed An investigation of the level of burnout and resilience among hospital based nurse managers after COVID 19 — A cross-sectional questionnaire-based study, demonstrated that as a group, ward managers showed moderate to high resilience. Similarly, **Shahrbabaki et al., (2023)** who studied the relationship between nurses' psychological resilience and job satisfaction during the COVID-19 pandemic: a descriptive-analytical cross-sectional study in Iran and indicated the resilience of all samples was moderate with mean resilience score was 58.14±4.66, which was higher than the midpoint of the questionnaire.

On the other hand, the present results contradict with **Fathy et al., (2024)** study in Egypt about Staff Nurses' Resilience: Its Relation to Moral Intelligence and Professional Compatibility and indicated that more than two third of nurses had a high level of resilience while, more than one quarter had a moderate level. In addition, the current study in opposite line with **Bunyard-Fallquist, (2024)** who studied "Increasing Resiliency in Front-Line Nurse Managers", and who stated that all nurse mangers had a high level of resilience.

ISSN 2786-0183
Helwan International Journal for Nursing Research and Pratctice
Vol. 3, Issue 8, Month: December 2024, Available at: https://hijnrp.journals.ekb.eg/

The results of the present study indicated that nurse managers had moderately high levels of adaptive leadership, particularly in "Regulate Distress" and "Get on the Balcony". These dimensions reflect a strong ability to maintain team stability and assess complex problems with perspective. However, "Protect Leadership Voices from Below" scored the lowest, suggesting that inclusive leadership and empowerment of subordinate staff may be underdeveloped. These findings suggest that the ability to regulate distress and gain a broad strategic view reflects both individual resilience and learned leadership skills. The challenge of incorporating lower-tier voices may be tied to hierarchical organizational structures or cultural norms in some Egyptian hospital settings. Further, these high level matched with the majority of study subjects were bachelor degree and about half of them had more than fifteen years of experiences in nursing that reflect positively in their adaptive level.

The results of other studies in the same line with our findings. For instance, **Alluhaybi et al., (2023)** study the impact of nurse manager leadership styles on work engagement: a systematic literature review and found that nurse managers had a high transformational (adaptive) leadership especially in motivational and problem-solving dimensions enhance staff empowerment and work engagement. Meanwhile, the study by **Lee & Seo, (2024)** about effects of nurse managers' inclusive leadership on nurses' psychological safety and innovative work behavior: the moderating role of collectivism and revealed that nurses with lower levels of collectivism were more responsive to their managers' inclusive behaviors, strengthening the relation between inclusive leadership, psychological safety, and innovative work behavior.

However, the present findings contradict with **Ismail et al., (2024)** study in Egypt about effect of educational program about adaptive leadership for nurse managers on staff nurses' outcomes and reported that more than three fifths of nurse managers had unsatisfactory performance regarding adaptive leadership approaches at pre-program which improved to be the majority of them had satisfactory performance at immediate post program with slightly decreased to be more than three-quarters at follow up program phase.

The results of the current study stated a significant positive correlation ($r = 0.68$, $p < 0.001$) between resilience and adaptive leadership. This suggests that resilient nurse managers are more likely to demonstrate adaptive leadership behaviors, including emotional control, team empowerment, and strategic visioning. Notably, dimensions such as "Determination" (resilience) strongly correlated with "Regulate Distress" and "Disciplined Attention" (adaptive leadership), reinforcing the functional interdependence of the two constructs.

ISSN 2786-0183
Helwan International Journal for Nursing Research and Pratctice
Vol. 3, Issue 8, Month: December 2024, Available at: https://hijnrp.journals.ekb.eg/

The results of other studies in the same line with our findings. For instance, **Lenssen et al. (2025)** about exploring nurses' leadership and resilience in a complex daily work environment: a qualitative study and emphasize that there was a significant positive correlation between resilience and nurses' leadership different styles. Additionally, the study by **Latukha et al., (2025)** who conducted the study in Russia about adaptive leadership for multilevel resilience in the context of disruptions and stated that adaptive leadership can positively influence all three levels of resilience, with adaptive leadership having the most significant impact on team resilience, then organizational resilience, leaving employee resilience behind.

In contrary, the current study results were in disagreement with **Ha et al., (2024)** study the role of adaptive resilience in the relationship between transformational leadership, affective commitment and turnover intention in the post COVID-19 era: a case of Vietnam and reported that transformational leadership does not only directly affect adaptive resilience and turnover intention, but also indirectly and fully affects affective commitment via adaptive resilience, and indirectly and partially affects turnover intention via affective commitment and adaptive resilience. Furthermore, adaptive resilience significantly impacts turnover intention via affective commitment.

The results of the present study revealed the regression analysis of resilience was the strongest predictor of adaptive leadership ($\beta = 0.55$, $p < 0.001$), followed by years of nurse manager experience ($\beta = 0.15$, $p = 0.013$). Hospital type (public vs. private) was also significant, suggesting contextual factors influence leadership style. These findings suggests that nurse managers who demonstrate robust psychological resilience such as emotional regulation, flexibility, and self-efficacy are more adept at navigating complex adaptive challenges, consistent with theories positioning resilience as integral to adaptive leadership. Moreover, governance structures, resources, and organizational culture shape leadership expression and effectiveness.

The results of other studies in the same line with our findings. For instance, **Abdul Salam et al. (2023)** who conducted the study in Lebanon about transformational leadership and predictors of resilience among registered nurses: a cross-sectional survey in an underserved area and showed that strong resilience predictors among nurses, moderated by transformational leadership perceptions. Also, the study the present study results in harmony with the study by **Siri, (2023)** entitled trials to triumphs: a conceptual integration of resilience and leadership and who illustrated that resilience predicts strong leadership capabilities. Similarity, the study by **Kristian, (2024)** study Adaptive Leadership: Nurse Executives Building Organizational Adaptive Capacity During

Times of Crisis, Challenge, and Change and found that Swedish prehospital-care managers describe adaptive leadership as emerging through experience, peer mentoring, and reflective practice.

Conclusion

This study examined the role of resilience and adaptive leadership among nurse managers in sustaining healthcare systems. The findings indicate that majority of nurse managers exhibited a moderate overall level of resilience and nurse managers had moderately high levels of adaptive leadership. Meanwhile, there was significant positive correlation ($r = 0.68$, $p < 0.001$) between resilience and adaptive leadership.

Implications for Practice:

To advance nursing leadership and support sustainable healthcare systems, it is essential to strengthen resilience training programs for nurse managers by incorporating targeted modules on emotional regulation, problem-solving, and interpersonal interaction, with particular focus on areas such as organization and interaction that scored lower in the current study. Promoting inclusive leadership practices is equally important; nurse leaders should be encouraged to actively protect and amplify staff voices from below, thereby fostering a culture of openness, trust, and shared decision-making.

Additionally, incorporating adaptive leadership frameworks into nurse manager onboarding and continuing education can enhance flexibility, team regulation, and strategic thinking. Future research should conduct longitudinal studies to examine the long-term impact of resilience and adaptive leadership on nurse retention, patient outcomes, and healthcare system sustainability. Moreover, exploring contextual influences such as hospital type, organizational culture, and resource availability can offer deeper insights into how adaptive leadership is developed and expressed in various healthcare environments.

References:

- **Algabar, A., Ghadery, S., Mohamed, L., & Abou Shaheen, R. (2023).** Role of Nurse Managers' Sustainable Management Behaviors in Building Sustainability Consciousness among Nurses. Tanta Scientific Nursing Journal, 30(3), 246-261. doi: 10.21608/tsnj.2023.307832

- **Alluhaybi, A., Wilson, A., Usher, K., & Durkin, J. (2023).** Impact of Nurse Manager Leadership Styles on Work Engagement: A Systematic Literature Review. *Journal of nursing management*, *2023*, 5090276. https://doi.org/10.1155/2023/5090276
- **Bunyard-Fallquist, A. N. (2024).** Increasing Resiliency in Front-Line Nurse Managers. Master's Projects and *Capstones*. 1746. https://repository.usfca.edu/capstone/1746
- **Clesen, A. (2017).** *Adapt and overcome: Exploration of an adaptive leadership measure* (Master's thesis, San Diego State University). ProQuest Dissertations Publishing.
- **Capili B. (2021).** Cross-Sectional Studies. *The American journal of nursing*, *121*(10), 59–62. https://doi.org/10.1097/01.NAJ.0000794280.73744.fe
- **Chughtai, M. S., Syed, F., Naseer, S., & Chinchilla, N. (2023).** Role of adaptive leadership in learning organizations to boost organizational innovations with change self-efficacy. *Current psychology (New Brunswick, N.J.)*, 1–20. Advance online publication. https://doi.org/10.1007/s12144-023-04669-z
- **Dajani, M.A. (2022).** "Adaptive Leadership, Organisational Resilience and the Mediating Effect of Change Management Amid Egyptian Academia Crises," International Business Research, Canadian Center of Science and Education, vol. 15(12), pages 1-47, December. https://doi.org/10.5539/ibr.v15n12p47
- **El-Sobky, A., & Aladdin, M. (2024).** From reform to excellence: the future of health care in Egypt. The Lancet Global Health, 12(10), e1584-e1585.
- **Fathy Abo Baraka, F., Ismail Ali, H., & Mohamed Araby Ebraheem, S. (2024).** Staff Nurses' Resilience: Its Relation to Moral Intelligence and Professional Compatibility. Egyptian Journal of Health Care, 15(2), 770-782. doi: 10.21608/ejhc.2024.356780
- **Filip, R., Gheorghita Puscaselu, R., Anchidin-Norocel, L., Dimian, M., & Savage, W. K. (2022).** Global Challenges to Public Health Care Systems during the COVID-19 Pandemic: A Review of Pandemic Measures and Problems. *Journal of personalized medicine*, *12*(8), 1295. https://doi.org/10.3390/jpm12081295
- **Ha, M. T. P., Ho, D. T., & Nguyen, L. N. (2024).** The role of adaptive resilience in the relationship between transformational leadership, affective commitment and turnover intention in the post COVID-19 era: a case of Vietnam. Business: Theory and Practice, 25(1), 200–209. https://doi.org/10.3846/btp.2024.20091

- **Ismail Anter El-Dash, R., Abd-Elfatah Abo Gad, R., & Hassan El-Sayed Mahfouz, H. (2024).** Effect of Educational Program about Adaptive Leadership for Nurse Managers on Staff Nurses' outcomes. Journal of Nursing Science Benha University, 5(1), 403-421. doi: 10.21608/jnsbu.2024.337823
- **Kristian, P. (2024).**"Adaptive Leadership: Nurse Executives Building Organizational Adaptive Capacity During Times of Crisis, Challenge, and Change". Dissertations. 570. https://digitalcommons.umassglobal.edu/edd_dissertations/570
- **Latukha, M., Yakovleva, P. and Yan, K. (2025),** Adaptive Leadership for Multilevel Resilience in the Context of Disruptions. Thunderbird Int. Bus. Rev., 67: 149-167. https://doi.org/10.1002/tie.22416
- **Lee, S. E., & Seo, J. K. (2024).** Effects of nurse managers' inclusive leadership on nurses' psychological safety and innovative work behavior: The moderating role of collectivism. *Journal of nursing scholarship : an official publication of Sigma Theta Tau International Honor Society of Nursing*, *56*(4), 554–562. https://doi.org/10.1111/jnu.12965
- **Lenssen, E., Nagtegaal, I., van Oostveen, C., Sieben, A., van Rijssen, L., & Weggelaar, A. M. (2025).** Exploring nurses' leadership and resilience in a complex daily work environment: a qualitative study. *BMC nursing*, *24*(1), 173. https://doi.org/10.1186/s12912-025-02761-2
- **Management Advisory Service. (2011).** *Resilience Assessment Questionnaire*. The Well-being and Performance Group. http://www.mas.org.uk
- **Northouse, P.G. (2016).** *Leadership: theory and practice*, Thousand Oaks SAGE
- **Pallesen, K. S., McCormack, B., Kjerholt, M., Borre, L. Z., Rosted, E., & Hølge-Hazelton, B. (2022).** An investigation of the level of burnout and resilience among hospital based nurse managers after COVID 19 - A cross-sectional questionnaire-based study. *Journal of nursing management*, *30*(8), 4107–4115. https://doi.org/10.1111/jonm.13868
- **Abdul Salam, H., Dumit, N. Y., Clinton, M., & Mahfoud, Z. (2023).** Transformational leadership and predictors of resilience among registered nurses: a cross-sectional survey in an underserved area. *BMC nursing*, *22*(1), 37. https://doi.org/10.1186/s12912-023-01192-1
- **Shahrbabaki, P. M., Abolghaseminejad, P., Lari, L. A., Zeidabadinejad, S., & Dehghan, M. (2023).** The relationship between nurses' psychological resilience and job satisfaction

during the COVID-19 pandemic: a descriptive-analytical cross-sectional study in Iran. *BMC nursing*, *22*(1), 137. https://doi.org/10.1186/s12912-023-01310-z

- **Sharma, M., Akhter, M. S., Roy, S., & Srejon, R. (2025).** Future Issues in Global Health: Challenges and Conundrums. International Journal of Environmental Research and Public Health, 22(3), 325. https://doi.org/10.3390/ijerph22030325
- **Sihvola, S., Kvist, T., & Nurmeksela, A. (2022).** Nurse leaders' resilience and their role in supporting nurses' resilience during the COVID-19 pandemic: A scoping review. *Journal of nursing management*, *30*(6), 1869–1880. https://doi.org/10.1111/jonm.13640
- **Siri, K. (2023).** "Trials to Triumphs: A Conceptual Integration of Resilience and Leadership". CMC Senior Theses. 3526. https://scholarship.claremont.edu/cmc_theses/3526
- **Sott, M. K., & Bender, M. S. (2025).** The Role of Adaptive Leadership in Times of Crisis: A Systematic Review and Conceptual Framework. Merits, 5(1), 2. https://doi.org/10.3390/merits5010002
- **Zhang, R., Shan, M., Yin, Y., Wu, Y., Gao, P., Xin, Y., & Shen, K. (2025).** Psychological capital appreciation as a mediator between resilience and burnout among ICU nurses. *Frontiers in public health*, *13*, 1551725. https://doi.org/10.3389/fpubh.2025.1551725