Emotional intelligence and leadership styles of nurse managers in Ha'il, Saudi Arabia

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ABSTRACT

This study explores the link between emotional intelligence (EI) and leadership styles among nurse managers working in government hospitals in Ha'il, Saudi Arabia. Using a descriptive-correlational design, data were collected from 154 nurse managers through a validated 52-item questionnaire that assessed EI and six leadership styles: transformational, democratic, autocratic, transactional, laissez-faire, and strategic. The findings showed that nurse managers had moderate levels of EI. Among the leadership styles, transformational leadership was used most often, while laissez-faire was least common. EI was moderately and positively correlated with strategic leadership ($r = 0.51$) and showed weak positive correlations with democratic, autocratic, transactional, and laissez-faire styles. However, there was no significant correlation between EI and transformational leadership ($r = 0.19$, $p = 0.18$). Linear regression analysis indicated that EI significantly predicted democratic, autocratic, transactional, laissez-faire, and strategic leadership styles, with the strongest predictive value for strategic leadership ($R^2 = 0.28$). These results challenge the traditional belief that EI is closely associated with transformational leadership. Instead, they suggest that EI's influence on leadership may depend on specific contexts. The study highlights the important but complex role of EI in shaping nurse managers' leadership approaches. To develop effective and adaptable nurse leaders for today's healthcare environment, leadership programs should focus on enhancing EI alongside organizational support.

1. Introduction

True leadership is not about authority or titles but the profound ability to inspire, empower, and drive meaningful change in others. As Ye et al. (2022) articulate, leadership is built on the foundation of influence, an intangible yet powerful force that propels teams and organizations toward shared goals. At its core, influence is the capacity to motivate individuals to align their efforts and aspirations, making it indispensable for effective leadership (Lin et al., 2020). However, persuading others to follow a vision is challenging, especially in environments marked by stress and a lack of emotional intelligence (EI). Workplace culture and inadequate EI can undermine one's ability to wield influence, leaving leaders ineffective and disengaged from their teams. Thus, developing and leveraging a high level of emotional intelligence becomes paramount for leaders aiming to navigate these complexities and foster environments of trust, collaboration, and shared success.

EI is the capacity to monitor one's own and other people's emotions, to differentiate between them, and to use this knowledge to guide one's thoughts and actions (Salovey and Mayer 1990; Goleman et al., 2013). EI supports our capacity for stress management, adaptability, excitement, empathy, problem-solving, communication, and our ability to interpret and guide a sound response to social

circumstances and disputes; these are essential qualities of a strong leader. Leadership style is the characteristic approach and behavior a leader adopts to influence, guide, and motivate others toward achieving organizational goals. It encompasses various dimensions, including transformational, democratic, autocratic, transactional, laissez-faire, and strategic leadership styles, each of which reflects different methods of interaction, decision-making, and team management (Opoku et al., 2015; Fagerdal et al., 2022; Sfantou et al., 2017).

In Saudi Arabia, nurse managers are vital in bridging clinical care and administrative responsibilities within a healthcare system regulated by the Ministry of Health. Their career paths typically begin with a nursing degree, followed by clinical experience and leadership training, progressing through structured hierarchies from first-line managers to top management roles (Alharbi et al., 2021). Most nurse managers work in government hospitals, where leadership competencies such as emotional intelligence, communication skills, and strategic planning are increasingly emphasized to align with the Saudi Vision 2030 initiative, which aims to enhance healthcare quality and professional capabilities (Alilyyani et al., 2024; Spano-Szekely et al., 2016).

Some of the importance of having high emotional intelligence in leadership includes the capacity to utilize their emotions in identifying and comprehending their own emotions to arrive at more well-informed and logical decisions (Cavaness et al., 2020). In addition, individuals can leverage their capacity for empathy to consider the viewpoints and needs of their team members when formulating judgments. This phenomenon has the potential to result in enhanced decision-making processes that exhibit more congruence with the objectives and principles of the company. Leaders who possess a high level of emotional intelligence could effectively inspire and encourage their team members, hence facilitating the attainment of their collective objectives (Coronado-Maldonado and Benítez-Márquez, 2023). Individuals have the capacity to utilize their aptitude in perceiving and comprehending the emotional states of their colleagues to establish a work environment that is conducive to positivity and support. In addition, individuals can leverage their aptitude for effective communication and the cultivation of robust interpersonal connections to motivate their team members towards surpassing expectations in their professional endeavors (Poláková et al., 2023). This phenomenon has the potential to result in enhanced performance, increased production, and heightened job satisfaction.

Leadership is inherently emotional, requiring leaders to connect with others beyond logic and reason. EI is essential in this context, particularly in transformational leadership, which aims to inspire and empower followers. Research by Weinberger (2009) revealed a strong link between EI and transformational leadership, with emotional

competencies like empathy and self-awareness being crucial. Similarly, Alshammari et al. (2020) found EI vital for authentic leadership in Saudi Arabia, focusing on ethical behavior and trust. Rahman et al. (2012) noted a strong correlation between EI and transformational leadership, but a weaker connection with transactional leadership. These findings emphasize that EI is a key element of effective leadership, enabling leaders to inspire and foster meaningful connections (Kim and Cruz, 2022).

This study stands out due to its unique focus on the relationship between EI and a variety of leadership styles among nurse managers in government hospitals in Ha'il, Saudi Arabia. Unlike most previous studies that concentrated on a single leadership style, particularly transformational leadership, and consistently found a positive correlation between EI and this style, this study delves into a more comprehensive set of leadership styles. It explores the role of EI in democratic, autocratic, transactional, laissez-faire, and strategic leadership within a healthcare management context (Lee et al., 2022).

This study enhances our understanding of how EI interacts with various leadership styles among nurse managers. It reveals that EI has a moderate relationship with strategic leadership and a weak relationship with democratic, autocratic, transactional, and laissez-faire styles. Notably, there is no significant relationship between EI and transformational leadership. This challenges the common assumption that EI is always positively correlated with transformational leadership, suggesting that the impact of EI on leadership style may be more situational or context-specific than previously believed. Furthermore, the study emphasizes the potential of strategic leadership as an effective style linked to EI, especially in healthcare settings (Alsadaan et al., 2023).

The present study was conducted by researchers with the following aims: (1) to describe the level of emotional intelligence among nurse managers in Ha'il; (2) to outline the leadership styles employed by these nurse managers in Ha'il; and (3) to examine the relationship between EI and the leadership styles of nurse managers in Ha'il, Saudi Arabia.

2. Methodology

This study used a descriptive-correlational design since this study does not infer causation (Polit and Beck, 2021). The study focused on the emotional intelligence and leadership styles of nurse managers in Ha'il, Saudi Arabia. Nurse managers are defined in this study as nurses who occupy management roles, ranging from first-line managers to executives. Further, this study focused on government hospitals in Hail, Saudi Arabia. The study sample criteria were based on the hierarchical structure in Saudi Arabian government hospitals, which categorizes nursing management into first-line, middle, and top management levels. First-line nurse managers, like charge and head nurses,

supervise frontline staff and manage daily operations. In contrast, top managers, such as chief and assistant chief nurses, focus on strategic planning, policy-making, and overall oversight of nursing services. This classification aligns with their responsibilities and allows for a comprehensive understanding of the perspectives and leadership practices of nurse managers across all management tiers.

To be included in this study, nurses must fulfill the following criteria: (1) occupy a management position with first-line managers (Charge and Head Nurses), middle managers (Supervisors), and top managers (Deputy, Assistant Director, Assistant Chief Nurse, Director, Chief Nurse). (2) working in government hospitals. (3) willingness to participate in the study.

Excluded in this study are the staff, volunteer, and ancillary nurses, those nurse managers who are working in the private sector, and private and government stand-alone clinics and primary healthcare facilities.

The city of Ha'il is equipped with a total of four (4) hospitals, which effectively serve the healthcare needs of its inhabitants. Some members of the study team conducted a primary survey to count the number of nurse managers in the four hospitals. The findings revealed an estimated total of 154 nurse managers. The researchers made use of total enumeration to adequately represent the entire population with 154 respondents.

This study's data collection instrument was a questionnaire. It consists of three sections. Section I includes the demographic profile with four components, including age, gender, years of managerial experience, and position. Section II consists of 30 emotional intelligence items. It was adapted from the study (Llego, 2021) in which the researcher modified the Schutte Emotional Intelligence Scale (SSEIT) by Schutte et al. (1998). Section III was adapted from the Opoku et al. (2015), who modified the 18-item Leadership Style Inventory. Items for Transformational leadership style (1, 7, and 13); democratic leadership style (2, 8, and 14); autocratic leadership style (3, 9, and 15); transactional leadership style (4, 10, and 16); laissez-faire leadership style (5, 11, and 17); and strategic leadership style (6, 12, and 18). The instruments for Sections II and III were adapted because they are free and accessible.

As this is the first time the instruments have been used together, they were evaluated for face validity and internal consistency. Five experts have graded the questionnaire; three are Deans of different Colleges of Nursing, one is a Certified Psychometrician, and the other is an Associate Professor at one of the Saudi Arabian universities. Using a tool, the experts graded the questionnaire. The entire mean score was 4.25, indicating that the questionnaire is quite valid. Regarding the reliability test, 20 faculty members of the College of Nursing participated in the pilot study. Cronbach's alpha revealed a score of 0.91, which indicates that the 52-item questionnaire has an excellent internal consistency (Polit and Beck, 2013).

After seeking all the approvals, one of the researchers personally administered the data gathering. Since the questionnaire is a 52-item questionnaire, the researcher opted to leave the questionnaires to the 154 respondents; this is to give them ample time to answer. Moreover, the researcher left 5 extra copies of the questionnaire per hospital to ensure that all the nurse managers could answer the questionnaire. The questionnaire turnout was 100%; 154 questionnaires were answered, and 20 extra unanswered questionnaires. The extra unanswered questionnaires refer to the additional copies of the survey instruments that were left at each hospital as part of the data collection process. These were provided to account for unforeseen circumstances, such as misplaced questionnaires, overlooked participants, or new nurse managers becoming eligible during the data collection period.

The researchers employed several strategies to ensure that the responses were unbiased and accurately reflected the experiences of nurse managers. First, a permission letter detailing the study's objectives, potential benefits, and confidentiality measures was attached to the questionnaires. This transparency likely fostered trust and encouraged honest participation. To minimize social desirability bias, the questionnaires were designed to be anonymous, ensuring that participants could respond without fear of judgment or repercussions.

Although the study achieved a 100% response rate with all 154 targeted nurse managers completing the questionnaire, the researchers had contingency plans to address potential missing data. For example, five extra copies of the questionnaire were left at each hospital to accommodate overlooked or new respondents. During the data collection process, questionnaires were reviewed for completeness before retrieval. In cases where incomplete responses were identified, participants were contacted (within the ethical boundaries of the study's anonymity protocol) to provide missing information. However, as no missing data were reported, the study's data set remained intact and fully representative of the targeted population. Actual data collection and retrieval commenced in January to February 2023.

The data collected in this study were analyzed using SPSS version 24. Frequency, percentage, and mean were utilized to describe the data. EI will be measured as follows: ≤ 95.99 Below Average; 96-122.99 Average; ≥ 123 EI Above Average. While for the Leadership Styles, a total score of 0.00-4.99 shows a low level of style, 5.00-8.99 a moderate level, and a score of 9.00-12.00 shows a high level of style.

The Shapiro-Wilk and Kolmogorov-Smirnov tests were conducted to assess the normal distribution of EI and leadership styles data. For EI, the Shapiro-Wilk statistic was 0.975 ($p = 0.063$), and the

Kolmogorov-Smirnov statistic was 0.051 (p = 0.082), indicating normality. Leadership styles showed Shapiro-Wilk statistics between 0.960 and 0.982 (p > 0.05) and Kolmogorov-Smirnov values from 0.042 to 0.062 (p > 0.05), also suggesting normal distribution. These findings support using parametric statistical tests, such as the independent sample t-test, Pearson's correlation analysis, and simple linear regression analysis.

3. Results

Table 1 shows that most of the respondents are aged between 30 and 39 years, comprising half of the sample (50%). This suggests a relatively young to mid-career managerial population, with fewer respondents in the younger (20-29) and older (50+) age brackets. The sample is predominantly female, making up over 70% of the respondents. This might indicate a higher proportion of women in managerial roles in this context. A significant portion of the respondents (nearly 39%) are relatively new to managerial roles, with 1-5 years of experience. This indicates that many managers are early in their managerial careers. Fewer respondents have over 16 years of experience, representing a smaller segment of more seasoned managers. The largest proportion of respondents are first-line managers (almost 47%), suggesting that most respondents are at the initial level of management. Middle and top management roles are less represented, though a notable proportion (over a quarter) are in top management positions. Table 2 shows the level of emotional intelligence of nurse managers. The mean score for EI was 121.22 with an SD of 9.30. Table 3 reveals the level of leadership styles of Nurse Managers. Transformational leadership style has a mean score 9.48 with an SD of 1.58; Democratic Leadership Style has a mean score of 7.96 with an SD of 1.96;

Autocratic Leadership Style has a mean score of 6.89 with an SD of 2.01; Transactional Leadership Style has a mean score of 8.13 with an SD of 1.82; Laissez-faire Leadership has a mean score of 6.15 with an SD of 2.25; and Strategic Leadership Style has a mean score of 8.78 with an SD of 1.44. Table 4 compares the leadership styles of nurse managers with average and above-average EI. The findings indicate that emotional intelligence significantly influences the leadership styles adopted by nurse managers.

Table 1: Demographic profile (N = 154)

Variable	Frequency	Percentage
Age		
20-29 years old	23	14.94
30-39 years old	77	50.00
40-49 years old	37	24.03
50 years old and above	17	11.03
Sex		
Male	46	29.87
Female	108	70.13
Years of managerial experience		
1-5 years	60	38.96
6-10 years	37	24.02
11-15 years	38	24.68
16 years and above	19	12.34
Position		
First-line managers	77	50.00
Middle managers	44	28.57
Top management	33	21.43

Table 2: The level of emotional intelligence of the nurse managers (N = 154)

Mean	± SD	Interpretation
121.22	9.30	Average

Table 3: The level of leadership style of nurse managers (N = 154)

Leadership style	Mean	± SD	Interpretation
Transformational	9.48	1.58	High
Democratic	7.96	1.96	Moderate
Autocratic	6.89	2.01	Moderate
Transactional	8.13	1.82	Moderate
Laissez-faire	6.15	2.25	Moderate
Strategic	8.78	1.44	Moderate

Table 4: The difference between the leadership styles of nurse managers when grouped according to the level of their emotional intelligence (N = 154)

Leadership style	Level of EI	Mean	± SD	t-value	df	p-value
Transformational	Average	3.11	0.43	-0.88	153	0.39
	Above average	3.25	0.67			
Democratic	Average	2.45	0.63	-3.67	153	0.01
	Above average	3.05	0.50			
Autocratic	Average	2.05	0.51	-4.27	153	<0.001
	Above average	2.75	0.70			
Transactional	Average	2.51	0.51	-3.54	153	0.001
	Above average	3.07	0.61			
Laissez-faire	Average	1.82	0.60	-3.34	153	0.002
	Above average	2.47	0.83			
Strategic	Average	2.77	0.40	-3.55	153	0.001
	Above average	3.21	0.50			

In Table 5, it is shown that no significant difference was observed in the use of transformational leadership between those with average (M = 3.11, SD = 0.43) and above average EI (M = 3.25, SD = 0.67), t(153) = -0.88, p = 0.39. However, significant differences were noted across all other leadership styles.

Nurse managers with above-average EI scored significantly higher in democratic leadership (M =

3.05, SD = 0.50) compared to those with average EI (M = 2.45, SD = 0.63), t(153) = -3.67, p = 0.01. Similarly, those with above-average EI demonstrated a significantly stronger inclination toward autocratic leadership (M = 2.75, SD = 0.70) than their average EI counterparts (M = 2.05, SD = 0.51), t(153) = -4.27, p < 0.001. Significant differences were also observed in transactional leadership (M = 3.07, SD = 0.61 vs. M = 2.51, SD = 0.51), t(153) = -3.54, p = 0.001, and

laissez-faire leadership (M = 2.47, SD = 0.83 vs. M = 1.82, SD = 0.60), t(153) = -3.34, p = 0.002. Lastly, nurse managers with above-average EI demonstrated significantly higher adoption of strategic leadership (M = 3.21, SD = 0.50) compared to those with average EI (M = 2.77, SD = 0.40), t(153) = -3.55, p = 0.001. These results suggest that higher emotional intelligence among nurse managers is associated with a broader and more frequent utilization of various leadership styles, particularly democratic, autocratic, transactional, laissez-faire, and strategic approaches.

Table 5: The relationship between the level of emotional intelligence and leadership style of the nurse managers (N = 154)

	Leadership Style	r-value	Significance	Interpretation
EI	Transformational	0.19	0.18	Not significant
	Democratic	0.46	0.01	Weak positive relationship
	Autocratic	0.49	0.01	Weak positive relationship
	Transactional	0.45	0.01	Weak positive relationship
	Laissez-faire	0.37	0.01	Weak positive relationship
	Strategic	0.51	0.01	Moderate positive relationship

For the relationship between EI and various leadership styles: for transformational leadership Pearson-r revealed a score of (r = 0.19, p = 0.18); for democratic (0.46, 0.01); for autocratic (0.49, 0.01); for transactional (0.45, 0.01); for laissez-faire (r = 0.37, p = 0.01); and strategic (0.51, p = 0.01). Table 6 presents the results of linear regression analyses assessing the predictive power of EI on various leadership styles of nurse managers. The coefficient of determination (R^2) values indicate the proportion of variance in each leadership style explained by EI. In contrast, the unstandardized regression coefficients (B), t-values, and p-values reflect the strength and significance of the prediction.

Table 6: The predictive strength of EI to the leadership styles of the nurse managers (N = 154)

Dependent	Independent	R^2	F	p-value	Unstandardized		β	t-value	p-value
					Constant	B			
Transformational style	EI	0.04	1.86	0.18	1.89	0.01	0.17	2.02	0.06
Democratic style	EI	0.21	13.71	0.001	-1.24	0.03	0.46	-1.18	0.001
Autocratic style	EI	0.24	16.09	0.001	-1.94	0.04	0.49	-1.83	0.001
Transactional style	EI	0.20	13.22	0.001	-0.86	0.03	0.45	-0.87	0.001
Laissez-faire Style	EI	0.14	8.09	0.01	-1.54	0.01	0.37	-1.22	0.01
Strategic style	EI	0.28	17.97	0.001	-0.24	0.03	0.51	-0.32	0.001

The results reveal that emotional intelligence significantly predicts several leadership styles. Democratic leadership (R^2 = 0.21, F = 13.71, p = 0.001) was significantly predicted by EI, with a positive unstandardized beta coefficient (B = 0.46, t = -1.18, p = 0.001), indicating that higher emotional intelligence is associated with greater use of democratic leadership. Similarly, autocratic leadership was significantly predicted by EI (R^2 = 0.24, F = 16.09, p = 0.001; B = 0.49, t = -1.83, p = 0.001), suggesting that emotionally intelligent nurse managers are more likely to also employ autocratic strategies, possibly for decision control in complex settings. EI also significantly predicted transactional leadership (R^2 = 0.20, F = 13.22, p = 0.001; B = 0.45, t = -0.87, p = 0.001), laissez-faire leadership (R^2 = 0.14, F = 8.09, p = 0.01; B = 0.37, t = -1.22, p = 0.01), and strategic leadership (R^2 = 0.28, F = 17.97, p = 0.001; B = 0.51, t = -0.32, p = 0.001). These findings indicate that emotionally intelligent nurse managers are more likely to employ a range of leadership styles depending on situational needs.

However, EI's prediction of transformational leadership did not reach statistical significance (R^2 = 0.04, F = 1.86, p = 0.18), though a marginal trend was noted (B = 0.17, t = 2.02, p = 0.06).

Emotional intelligence is a significant predictor of most leadership styles among nurse managers, particularly democratic, autocratic, transactional, laissez-faire, and strategic styles. This underscores the pivotal role of emotional intelligence in shaping leadership behavior within nursing management.

4. Discussion

The demographic profile of nurse managers in Ha'il, Saudi Arabia, reveals a predominantly young female workforce, many of whom occupy early-stage managerial positions. This composition may influence workplace dynamics, particularly leadership preferences and managerial practices (Galsanjigmed and Sekiguchi, 2023). The high proportion of first-line managers with limited experience suggests a developing leadership landscape where many still cultivate their leadership competencies (Canavesi and Minelli, 2022).

This study provides important insights into the relationship between EI and leadership styles among nurse managers in government hospitals. Findings show that nurse managers generally possess average EI levels, indicating a capacity to manage emotions, adapt to complex environments, and maintain effective interpersonal relationships (Bru-Luna et al., 2021). These abilities are vital for fostering teamwork, decision-making, and a supportive workplace culture (Jiang, 2024; Galanis et al., 2024).

Transformational leadership emerged as the most prevalent style among participants, aligning with nursing's collaborative and patient-centered ethos. This style has been linked to improved job satisfaction, empowerment, and organizational commitment (Iqbal et al., 2019; Ystaas et al., 2023). The preference for transformational leadership reflects the evolving role of nurse managers as change agents and facilitators of professional

growth. Conversely, laissez-faire leadership was least employed, a promising finding given its association with poor organizational outcomes and low team engagement (Garzón-Lasso et al., 2024; Specchia et al., 2021). Its minimal use suggests that nurse managers value active, accountable leadership, an essential trait in high-stakes clinical settings (Zhang et al., 2023). Notably, EI significantly predicted several leadership styles. The strongest was its association with strategic leadership (R^2 = 0.28), underscoring the ability of emotionally intelligent leaders to align team goals with long-term organizational objectives (Coronado-Maldonado and Benítez-Márquez, 2023; Almadani and Alamri, 2024). The optimistic prediction of democratic leadership highlights the role of EI in fostering inclusive decision-making and participatory management (Drigas et al., 2023; Rosing et al., 2022; Baek et al., 2023). Unexpectedly, EI also positively predicted autocratic leadership. Although typically seen as incompatible with emotional intelligence, this may reflect situational leadership tendencies. Emotionally intelligent managers may adopt directive approaches in emergencies where decisiveness is crucial. Similarly, the positive relationship between EI and transactional leadership suggests that emotionally intelligent leaders can balance empathy with performance-based expectations (Ejaz et al., 2024; Jo and Shin, 2025).

The association between EI and laissez-faire leadership is more nuanced. While generally seen as disengaged leadership, emotionally intelligent managers may use it strategically to empower capable staff through autonomy (Guibert-Lacasa and Vázquez-Calatayud, 2022). However, overuse could erode accountability and clarity (Iqbal et al., 2021).

Interestingly, EI did not significantly predict transformational leadership, diverging from prior studies that strongly link the two (Alshammari et al., 2020; Hsu et al., 2022). This discrepancy may stem from contextual factors, such as institutional culture, individual charisma, or the ability to articulate vision, which were not measured (Ystaas et al., 2023). These findings suggest the need for a broader analytical framework to understand leadership style variability comprehensively.

Despite EI's predictive strength across leadership styles, the observed correlations (r = 0.37–0.49) were modest, suggesting the influence of additional variables such as communication skills, organizational justice, and professional autonomy (Udod et al., 2020). Leadership behavior is likely shaped by personal and contextual factors, which merits further exploration.

5. Implications for practice

The findings support integrating EI training into nursing leadership development. Enhancing competencies such as self-awareness, empathy, and emotional regulation may help nurse managers better navigate complex healthcare environments. Programs emphasizing strategic and transformational leadership can foster adaptability and long-term planning, while mentorship initiatives may aid novice leaders in transitioning into managerial roles effectively.

6. Limitations and recommendations

This study's limitations include its sample size and focus on government hospitals, which limit generalizability. Private and stand-alone healthcare institutions were not included, which may operate under different cultural and administrative conditions. Future research should expand to diverse healthcare settings and explore mediating variables such as organizational culture, job stress, and decision-making autonomy using advanced statistical methods like structural equation modeling.

7. Conclusion

This study underscores emotional intelligence's significant yet complex role in shaping nurse managers' leadership styles in government hospitals in Ha'il. While EI predicts a range of leadership behaviors, particularly strategic and democratic, it does not operate in isolation. Leadership development efforts should, therefore, prioritize EI enhancement alongside broader organizational support to cultivate effective, adaptive nurse leaders capable of meeting modern healthcare challenges.

List of abbreviations

β	Unstandardized regression coefficient
df	Degrees of freedom
EI	Emotional intelligence
p	p-value (statistical significance)
R^2	Coefficient of determination
r	Pearson correlation coefficient
SD	Standard deviation
SPSS	Statistical package for the social sciences
SSEIT	Schutte self-report emotional intelligence test
t	t-statistic

Acknowledgment

Compliance with ethical standards

Ethical considerations

The study received ethical approval from the Research Ethics Committee of the University of Ha'il (Ref. No. H-2023-138, dated January 3, 2023), and hospital consent was obtained before data collection. A permission letter outlining the study's purpose, benefits, risks, and estimated completion time was attached to each questionnaire, with participation being voluntary and without compensation. All responses were anonymized, securely stored, and

handled in accordance with institutional policies and the Declaration of Helsinki.

Conflict of interest

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

References

Alharbi A, Rasmussen P, and Magarey J (2021). Clinical nurse managers' leadership practices in Saudi Arabian hospitals: A descriptive cross-sectional study. Journal of Nursing Management, 29(6): 1454–1464. https://doi.org/10.1111/jonm.13302 **PMid:33682226**

Alilyyani B, Althobaiti E, Al-Talhi M, Almalki T, Alharthy T, Alnefaie M, Talbi H, and Abuzaid A (2024). Nursing experience and leadership skills among staff nurses and intern nursing students in Saudi Arabia: A mixed methods study. BMC Nursing, 23: 87. https://doi.org/10.1186/s12912-024-01750-1 **PMid:38308273 PMCid:PMC10835976**

Almadani N and Alamri M (2024). Emotional intelligence among female nursing leaders in a transformational era. Journal of Nursing Management, 2024: 9973339. https://doi.org/10.1155/2024/9973339 **PMid:40224758 PMCid:PMC11918875**

Alsadaan N, Salameh B, and Reshia FA et al. (2023). Impact of nurse leaders behaviors on nursing staff performance: A systematic review of literature. INQUIRY: The Journal of Health Care Organization, Provision, and Financing, 2023: 60. https://doi.org/10.1177/00469580231178528 **PMid:37269099 PMCid:PMC10265372**

Alshammari F, Pasay-An E, Gonzales F, and Torres S (2020). Emotional intelligence and authentic leadership among Saudi nursing leaders in the Kingdom of Saudi Arabia. Journal of Professional Nursing, 36(6): 503-509. https://doi.org/10.1016/j.profnurs.2020.04.003 **PMid:33308547**

Baek H, Han K, Cho H, and Ju J (2023). Nursing teamwork is essential in promoting patient-centered care: A cross-sectional study. BMC Nursing, 22: 433. https://doi.org/10.1186/s12912-023-01592-3 **PMid:37978376 PMCid:PMC10655287**

Bru-Luna LM, Martí-Vilar M, Merino-Soto C, and Cervera-Santiago JL (2021). Emotional intelligence measures: A systematic review. Healthcare, 9(12): 1696. https://doi.org/10.3390/healthcare9121696 **PMid:34946422 PMCid:PMC8701889**

Canavesi A and Minelli E (2022). Servant leadership: A systematic literature review and network analysis. Employee Responsibilities and Rights Journal, 34(3): 267–289. https://doi.org/10.1007/s10672-021-09381-3 **PMid:40477405 PMCid:PMC8476984**

Cavaness K, Picchioni A, and Fleshman JW (2020). Linking emotional intelligence to successful health care leadership: The big five model of personality. Clinics in Colon and Rectal Surgery, 33(4): 195–203. https://doi.org/10.1055/s-0040-1709435 **PMid:32624714 PMCid:PMC7329378**

Coronado-Maldonado I and Benítez-Márquez MD (2023). Emotional intelligence, leadership, and work teams: A hybrid literature review. Heliyon, 9(10): e20356. https://doi.org/10.1016/j.heliyon.2023.e20356 **PMid:37790975 PMCid:PMC10543214**

Drigas A, Papoutsi C, and Skianis C (2023). Being an emotionally intelligent leader through the nine-layer model of emotional intelligence—The supporting role of new technologies.

Sustainability, 15(10): 8103. https://doi.org/10.3390/su15108103

Ejaz A, Quratulain S, Aulakh AH, Cando-Naranjo J, and Sabharwal M (2024). The conditional effects of the transformational leadership behaviors on leaders' emotional exhaustion: Roles of deep acting and emotional intelligence. The American Review of Public Administration, 55(1): 3-27. https://doi.org/10.1177/02750740241273978

Fagerdal B, Lyng HB, Guise V, Anderson JE, Thornam PL, and Wiig S (2022). Exploring the role of leaders in enabling adaptive capacity in hospital teams - A multiple case study. BMC Health Services Research, 22: 908. https://doi.org/10.1186/s12913-022-08296-5 **PMid:35831857 PMCid:PMC9281060**

Galanis P, Katsiroumpa A, Moisoglou I, Derizioti K, Gallos P, Kalogeropoulou M, and Papanikolaou V (2024). Emotional intelligence as critical competence in nurses' work performance: A cross-sectional study. Healthcare, 12(19): 1936. https://doi.org/10.3390/healthcare12191936 **PMid:39408116 PMCid:PMC11475988**

Galsanjigmed E and Sekiguchi T (2023). Challenges women experience in leadership careers: An integrative review. Merits, 3(2): 366–389. https://doi.org/10.3390/merits3020021

Garzón-Lasso F, Serrano-Malebrán J, Arenas-Arango S, and Molina C (2024). Full range leadership style and its effect on effectiveness, employee satisfaction, and extra effort: An empirical study. Frontiers in Psychology, 15: 1380935. https://doi.org/10.3389/fpsyg.2024.1380935 **PMid:39118842 PMCid:PMC11307206**

Goleman D, Boyatzis R, and McKee A (2013). Primal leadership: Unleashing the power of emotional intelligence. Harvard Business Review Press, Brighton, USA.

Guibert-Lacasa C and Vázquez-Calatayud M (2022). Nurses' clinical leadership in the hospital setting: A systematic review. Journal of Nursing Management, 30(4): 913–925. https://doi.org/10.1111/jonm.13570 **PMid:35229386 PMCid:PMC9311216**

Hsu N, Newman DA, and Badura KL (2022). Emotional intelligence and transformational leadership: Meta-analysis and explanatory model of female leadership advantage. Journal of Intelligence, 10(4): 104. https://doi.org/10.3390/jintelligence10040104 **PMid:36412784 PMCid:PMC9680507**

Iqbal K, Fatima T, and Naveed M (2019). The impact of transformational leadership on nurses' organizational commitment: A multiple mediation model. European Journal of Investigation in Health, Psychology and Education, 10(1): 262–275. https://doi.org/10.3390/ejihpe10010021 **PMid:34542484 PMCid:PMC8314220**

Jiang X (2024). Nursing leadership: Key element of professional development. International Journal of Nursing Sciences, 11(1): 1–2. https://doi.org/10.1016/j.ijnss.2023.12.015 **PMid:38352289 PMCid:PMC10859573**

Jo H and Shin D (2025). The impact of recognition, fairness, and leadership on employee outcomes: A large-scale multi-group analysis. PLOS ONE, 20(1): e0312951. https://doi.org/10.1371/journal.pone.0312951 **PMid:39787185 PMCid:PMC11717283**

Kim HD and Cruz AB (2022). Transformational leadership and psychological well-being of service-oriented staff: Hybrid data synthesis technique. International Journal of Environmental Research and Public Health, 19(13): 8189. https://doi.org/10.3390/ijerph19138189 **PMid:35805846 PMCid:PMC9266046**

Lee CC, Li YS, Yeh WC, and Yu Z (2022). The effects of leader emotional intelligence, leadership styles, organizational

commitment, and trust on job performance in the real estate brokerage industry. Frontiers in Psychology, 13: 881725. https://doi.org/10.3389/fpsyg.2022.881725 **PMid:35645864 PMCid:PMC9134196**

Lin CP, Xian J, Li B, and Huang H (2020). Transformational leadership and employees' thriving at work: The mediating roles of challenge-hindrance stressors. Frontiers in Psychology, 11: 1400. https://doi.org/10.3389/fpsyg.2020.01400 **PMid:32655458 PMCid:PMC7325323**

Llego JH (2021). The level of emotional intelligence and academic performance of nursing students: A correlational approach. International Journal of Educational Sciences, 32(1-3): 149-152. https://doi.org/10.31901/24566322.2021/32.1-3.1172

Opoku A, Ahmed V, and Cruickshank H (2015). Leadership style of sustainability professionals in the UK construction industry. Built Environment Project and Asset Management, 5(2): 184–201. https://doi.org/10.1108/BEPAM-12-2013-0075

Poláková M, Suleimanová JH, Madzík P, Copuš L, Molnárová I, and Polednová J (2023). Soft skills and their importance in the labour market under the conditions of Industry 5.0. Heliyon, 9(8): e18670. https://doi.org/10.1016/j.heliyon.2023.e18670 **PMid:37593611 PMCid:PMC10428053**

Polit D and Beck C (2021). Nursing research: Principles and methods. 11th Edition, Lippincott Williams and Wilkins, Philadelphia, USA.

Polit DF and Beck CT (2013). Is there still gender bias in nursing research? An update. Research in Nursing and Health, 36(1): 75-83. https://doi.org/10.1002/nur.21514 **PMid:23070969**

Rahman S, Ferdausy S, Uddin A (2012). Exploring the relationships between emotional intelligence, leadership styles, and gender: An empirical study. SIU Journal of Management. 2(2): 27-57.

Rosing F, Boer D, and Buengeler C (2022). When timing is key: How autocratic and democratic leadership relate to follower trust in emergency contexts. Frontiers in Psychology, 13: 904605. https://doi.org/10.3389/fpsyg.2022.904605 **PMid:35992493 PMCid:PMC9382123**

Salovey P and Mayer JD (1990). Emotional intelligence. Imagination, Cognition and Personality, 9(3): 185-211. https://doi.org/10.2190/DUGG-P24E-52WK-6CDG

Schutte NS, Malouff JM, Hall LE, Haggerty DJ, Cooper JT, Golden CJ, and Dornheim L (1998). Development and validation of a measure of emotional intelligence. Personality and Individual Differences, 25(2): 167-177. https://doi.org/10.1016/S0191-8869(98)00001-4

Sfantou DF, Laliotis A, Patelarou AE, Sifaki-Pistolla D, Matalliotakis M, and Patelarou E (2017). Importance of leadership style towards quality-of-care measures in healthcare settings: A systematic review. Healthcare, 5(4): 73. https://doi.org/10.3390/healthcare5040073 **PMid:29036901 PMCid:PMC5746707**

Spano-Szekely L, Griffin MTQ, Clavelle J, and Fitzpatrick JJ (2016). Emotional intelligence and transformational leadership in nurse managers. JONA: The Journal of Nursing Administration, 46(2): 101-108. https://doi.org/10.1097/NNA.0000000000000303 **PMid:26796823**

Specchia ML, Cozzolino MR, Carini E, Di Pilla A, Galletti C, Ricciardi W, and Damiani G (2021). Leadership styles and nurses' job satisfaction. Results of a systematic review. International Journal of Environmental Research and Public Health, 18(4): 1552. https://doi.org/10.3390/ijerph18041552 **PMid:33562016 PMCid:PMC7915070**

Udod SA, Hammond-Collins K, and Jenkins M (2020). Dynamics of emotional intelligence and empowerment: The perspectives of middle managers. SAGE Open, 10(2). https://doi.org/10.1177/2158244020919508

Weinberger LA (2009). Emotional intelligence, leadership style, and perceived leadership effectiveness. Advances in Developing Human Resources, 11(6): 747-772. https://doi.org/10.1177/1523422309360811

Ye P, Liu L, and Tan J (2022). Influence of leadership empowering behavior on employee innovation behavior: The moderating effect of personal development support. Frontiers in Psychology, 13: 1022377. https://doi.org/10.3389/fpsyg.2022.1022377 **PMid:36600721 PMCid:PMC9806223**

Ystaas LMK, Nikitara M, Ghobrial S, Latzourakis E, Polychronis G, and Constantinou CS (2023). The impact of transformational leadership in the nursing work environment and patients' outcomes: A systematic review. Nursing Reports, 13(3): 1271-1290. https://doi.org/10.3390/nursrep13030108 **PMid:37755351 PMCid:PMC10537672**

Zhang J, Wang Y, and Gao F (2023). The dark and bright side of laissez-faire leadership: Does subordinates' goal orientation make a difference? Frontiers in Psychology, 14: 1077357. https://doi.org/10.3389/fpsyg.2023.1077357 **PMid:37008876 PMCid:PMC10050591**