Assessing the Effectiveness of an Effective Leadership–Based Intervention in Reducing Burnout among Nurses in Tertiary Care Hospitals in Medina, Saudi Arabia

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Abstract:

This study examined the effectiveness of a leadership-based intervention in reducing burnout among nurses working in tertiary care hospitals in Medina, Saudi Arabia. The research focused on how transformational, transactional, and laissez-faire leadership styles relate to nurse burnout and whether a structured leadership resilience program could produce meaningful improvements in nurses' psychological well-being. A quasi-experimental design with pre–post measurements was employed, involving 280 nurses from multiple hospital departments. Data were collected using standardized measures of leadership styles and nurse burnout, and non-parametric statistical techniques were applied to examine correlations, group differences, and changes over time. The findings revealed significant relationships between all three leadership styles and burnout, indicating that leadership behavior is a major determinant of nurses' emotional exhaustion and workplace stress. The leadership-based intervention resulted in a statistically significant reduction in burnout, demonstrating that leadership development can lead to tangible improvements in nurse well-being. Demographic variables such as age, education, specialty, and years of experience did not significantly influence burnout, although some differences were observed in leadership perceptions across gender. Overall, the results highlight that nurse burnout is primarily shaped by leadership and organizational factors rather than individual characteristics. The study provides strong empirical support for the use of leadership-focused interventions as an effective strategy to enhance resilience, reduce burnout, and promote healthier work environments for nurses in tertiary care hospitals.

Keywords: *Nurse Burnout, leadership styles, transformational leadership, leadership intervention, Saudi Arabia*

1. Introduction

Nurse burnout has become one of the most critical workforce challenges facing contemporary healthcare systems, particularly in hospital environments characterized by high patient acuity, staffing shortages, and increasing organizational demands. Burnout is commonly understood as a psychological syndrome marked by emotional exhaustion, depersonalization, and a reduced sense of personal accomplishment, which together erode nurses' professional effectiveness and psychological well-being. Persistent exposure to these stressors not only compromises nurses' mental health but also undermines patient safety, care quality, and organizational stability. Leadership has emerged as one of the most powerful organizational determinants shaping how nurses experience and cope with these pressures. Transformational leadership, in particular, has been shown to buffer the emotional toll of demanding clinical environments by fostering trust, empowerment, and psychological safety, thereby reducing the risk of burnout among nursing staff (Boamah, 2022). When nurse managers engage in inspirational and supportive leadership behaviors, nurses are more likely to feel valued, motivated, and resilient in the face of workplace challenges. The relationship between leadership style and burnout has been widely documented across diverse healthcare contexts. Leadership behaviors directly influence nurses' perceptions of their work environment, including workload manageability, interpersonal support, and opportunities for professional growth. Transformational leadership has consistently been associated with lower burnout and higher satisfaction, while transactional leadership has shown mixed effects depending on how reward and control mechanisms are applied (Ayaz et al., 2025). In contrast, laissez-faire leadership, which is characterized by a lack of guidance and managerial presence, has been linked to poorer performance and psychological strain among nurses, particularly in complex hospital settings where clarity, coordination, and emotional support are essential (Alsadaan et al., 2025). These leadership dynamics are especially salient in nursing, where frontline staff routinely face emotional labor, ethical dilemmas, and high-stakes clinical decision-making.

Empowerment has been identified as a key mechanism through which leadership influences burnout. When nurses feel empowered to participate in decision-making, exercise professional judgment, and

access supportive resources, they are better equipped to manage stress and maintain psychological well-being. Leadership styles that promote empowerment have been shown to reduce emotional exhaustion and increase job engagement, thereby lowering burnout risk (Hall et al., 2022). Conversely, disempowering leadership environments intensify stress and erode nurses' sense of control, which accelerates the development of burnout. This dynamic is particularly pronounced in hospital systems experiencing rapid organizational change, staffing pressures, and increasing performance expectations, all of which place additional strain on nursing staff (Khan et al., 2025). The COVID-19 pandemic further amplified the vulnerability of nurses to burnout and exposed the critical role of leadership in crisis contexts. Nurse leaders were required to manage unprecedented workloads, emotional trauma, and resource constraints while simultaneously supporting their teams. Studies of nurse leaders during the pandemic revealed that work environment quality and leadership support were decisive factors in shaping burnout and intentions to leave (Montgomery & Patrician, 2022). In settings where leaders demonstrated authenticity, transparency, and emotional support, nurses reported lower burnout despite extreme working conditions (Al Sabei et al., 2023). These findings underscore that leadership is not merely a managerial function but a central psychosocial resource that can either protect or endanger nurses' well-being.

Despite strong evidence linking leadership to burnout, much of the existing literature remains descriptive or correlational. While numerous studies have demonstrated associations between leadership styles and nurse outcomes, far fewer have tested whether leadership can be intentionally modified to reduce burnout. Intervention-based research is therefore critically needed to move beyond identifying problems toward testing actionable solutions. Leadership development programs have shown promise in improving psychological well-being and professional competence among nurse leaders (Foote, 2023). Structured leadership interventions that target communication, empowerment, and emotional intelligence have also been associated with improvements in nurse engagement and reductions in burnout (Guo et al., 2022). However, such interventions remain under-studied in many healthcare systems, particularly in non-Western contexts. In Saudi Arabia, the need for effective nursing leadership is especially urgent due to ongoing healthcare reforms under Vision 2030, which emphasize quality, efficiency, and workforce sustainability. Saudi nurses face demanding

clinical environments, high patient volumes, and rapid organizational change, all of which increase vulnerability to burnout (Alzailai et al., 2023). Leadership practices within Saudi hospitals play a decisive role in shaping how nurses adapt to these pressures. Empirical evidence from Saudi Arabia has demonstrated that leadership style is closely linked to nurses' engagement, psychological well-being, and professional commitment (Alluhaybi et al., 2024). At the same time, regional studies have shown that frontline nurses in Middle Eastern healthcare systems experience substantial stress and burnout, particularly during public health crises, highlighting the importance of culturally responsive leadership strategies (Mary Pappiya et al., 2023).

While these studies provide valuable insights, there remains a notable gap in intervention-based research focused on leadership in Saudi tertiary hospitals. Most existing studies in the region are cross-sectional, limiting their ability to establish whether leadership development can actively reduce burnout. Moreover, few studies have examined how leadership interventions influence burnout across different demographic groups, including gender, experience, and specialty, despite evidence that these factors shape leadership perceptions and stress experiences (Alenezi et al., 2024). Without such evidence, healthcare organizations lack clear guidance on how to design leadership programs that effectively protect nurse well-being. Against this backdrop, the present study seeks to evaluate the effectiveness of a leadership-based intervention in reducing burnout among nurses working in tertiary care hospitals in Medina, Saudi Arabia. By integrating leadership theory with an intervention design and empirical testing, this study moves beyond correlation analysis to assess whether targeted leadership development can produce measurable improvements in nurse well-being. By focusing on transformational, transactional, and laissez-faire leadership styles, the study aims to identify which leadership approaches are most strongly associated with burnout and how modifying leadership behavior through a structured program can contribute to healthier, more sustainable nursing work environments.

2. Literature Review

2.1 Theoretical Discussion

Nurse burnout is a multidimensional psychological condition that arises from prolonged exposure to occupational stressors, particularly in emotionally demanding and high-pressure healthcare environments. It is most commonly conceptualized as a syndrome comprising emotional

exhaustion, depersonalization, and reduced personal accomplishment. Emotional exhaustion reflects the depletion of emotional resources, depersonalization refers to cynical and detached attitudes toward patients, and reduced personal accomplishment captures feelings of inefficacy and diminished professional value. Leadership plays a pivotal role in shaping how nurses experience and interpret these stressors, making it one of the most powerful organizational levers for either amplifying or alleviating burnout. Transformational leadership, in particular, has been shown to reduce emotional exhaustion and depersonalization by fostering meaning, trust, and professional identity among nurses (Boamah, 2022). Through inspirational motivation and individualized consideration, transformational leaders create psychological conditions that support resilience and engagement. The job demands–resources framework provides a useful theoretical lens for understanding how leadership influences burnout. According to this perspective, burnout develops when job demands such as workload, emotional labor, and time pressure exceed the resources available to nurses, including social support, autonomy, and recognition. Leadership styles directly shape this balance by either increasing demands through poor communication and lack of structure or by enhancing resources through empowerment and support. Empowering leadership has been shown to buffer the effects of high job demands by strengthening nurses' perceived control and intrinsic motivation, thereby lowering burnout risk (Khan et al., 2025).

When leaders invest in building supportive relationships and professional growth, they transform the work environment into a resource-rich setting that mitigates emotional strain. Transformational leadership is theoretically grounded in the idea that leaders can elevate followers' motivation and well-being by articulating a shared vision, modeling ethical behavior, and attending to individual needs. In nursing contexts, transformational leaders foster a sense of purpose and professional pride that counteracts feelings of exhaustion and disengagement. Empirical evidence indicates that transformational leadership is associated with lower burnout, particularly when nurses perceive their leaders as supportive and empowering (Guo et al., 2022). This leadership style is especially effective in complex clinical environments, where nurses must manage uncertainty, emotional demands, and heavy workloads. By promoting psychological safety and trust, transformational leaders create conditions in which nurses feel

safe to express concerns and seek support, thereby reducing emotional strain (Ahmed et al., 2023). Transactional leadership, by contrast, is based on an exchange relationship in which compliance is reinforced through rewards and corrective actions. While this style can enhance task clarity and short-term performance, its impact on burnout is more ambiguous. In some contexts, transactional leadership provides structure and predictability that may reduce stress, but in others it may increase pressure by emphasizing performance monitoring and external control. Evidence suggests that transactional leadership can either alleviate or exacerbate burnout depending on how it is implemented, particularly in high-demand environments such as hospitals (Ayaz et al., 2025).

When transactional leadership focuses primarily on compliance rather than support, it may fail to provide the emotional and psychological resources nurses need to cope with stress. Laissez-faire leadership represents the absence of effective leadership, characterized by avoidance of decision-making, lack of feedback, and minimal guidance. From a theoretical perspective, this style deprives nurses of essential job resources, including clarity, support, and recognition, which are critical for managing occupational stress. Laissez-faire leadership has been associated with reduced task performance and diminished intrinsic motivation, both of which contribute to burnout (Alsadaan et al., 2025). In hospital settings, where coordination and emotional support are vital, the absence of leadership creates uncertainty and frustration that accelerate emotional exhaustion and disengagement. Empowerment theory further explains how leadership styles translate into burnout outcomes. Structural and psychological empowerment provide nurses with access to information, resources, and opportunities for professional growth, enabling them to feel competent and valued. Leadership styles that promote empowerment reduce burnout by enhancing nurses' sense of autonomy and control over their work (Hall et al., 2022).

When nurses are empowered to participate in decisions and influence their practice environment, they are more resilient to stress and less likely to experience depersonalization or emotional exhaustion. Intervention theories in nursing leadership emphasize that leadership behaviors are not fixed traits but can be developed through targeted training and organizational support. Leadership development programs that focus on communication, emotional intelligence, and empowerment have been shown to improve leaders' capacity to support their teams and

reduce workplace burnout (Foote, 2023). Dualistic leadership interventions that engage both nurse managers and staff nurses have demonstrated significant reductions in burnout by improving relational dynamics and workplace climate (Guo et al., 2022). These findings support the theoretical proposition that modifying leadership behavior can generate meaningful improvements in nurse well-being. In crisis contexts such as the COVID-19 pandemic, leadership theory becomes even more salient. High job demands combined with emotional trauma and uncertainty intensify burnout risk, making leadership resources indispensable. Studies of nurse leaders during the pandemic have shown that supportive leadership and a positive work environment significantly buffer burnout and intentions to leave (Montgomery & Patrician, 2022). Authentic leadership, characterized by transparency and ethical behavior, has also been linked to lower burnout by fostering trust and psychological safety (Al Sabei et al., 2023). These theoretical perspectives converge on the idea that leadership functions as a critical organizational resource that can either exacerbate or alleviate burnout.

2.2 Hypotheses Development

Leadership theory and burnout research consistently indicate that the way nurse managers lead their teams has profound implications for nurses' psychological well-being. Leadership behaviors influence how nurses perceive their workload, emotional demands, and professional value, thereby shaping their vulnerability to burnout. Transformational leadership, in particular, has been widely recognized as a protective factor against burnout because it promotes trust, inspiration, and individualized support. Nurse managers who demonstrate transformational leadership behaviors encourage nurses to find meaning in their work, feel valued, and develop confidence in their professional abilities, all of which reduce emotional exhaustion and depersonalization. Empirical evidence has shown that transformational leadership is associated with lower levels of burnout among nurses by fostering supportive work environments and strengthening nurses' psychological resources (Boamah, 2022). When nurse managers provide individualized consideration and inspirational motivation, nurses are more likely to feel emotionally supported and less overwhelmed by the demands of hospital work. The mechanisms through which transformational leadership reduces burnout can be understood through empowerment and motivation theories. Transformational leaders empower nurses by

involving them in decision-making, recognizing their contributions, and encouraging professional growth. This sense of empowerment enhances intrinsic motivation and reduces feelings of helplessness and fatigue, which are core components of burnout. Studies conducted in intensive care and acute hospital settings have demonstrated that transformational leadership buffers the negative effects of work overload and emotional strain by increasing nurses' sense of control and professional worth (Guo et al., 2022). Similarly, when nurses perceive their leaders as inspirational and supportive, they experience greater psychological safety, which further protects them from emotional exhaustion and cynicism (Ahmed et al., 2023). These theoretical and empirical insights support the expectation that transformational leadership is significantly associated with nurse burnout.

H1: Transformational leadership practiced by nurse managers is significantly associated with nurse burnout among nurses working in tertiary care hospitals in Medina, Saudi Arabia.

Transactional leadership, which is grounded in contingent reward and corrective supervision, occupies a more complex position in burnout theory. On the one hand, transactional leadership can provide structure, role clarity, and performance expectations that may reduce ambiguity and stress. On the other hand, excessive emphasis on monitoring and external rewards may increase pressure and reduce intrinsic motivation, potentially contributing to burnout. The balance between these two effects determines whether transactional leadership alleviates or exacerbates nurse burnout. Research suggests that transactional leadership can reduce burnout when it is applied in a supportive and fair manner but may increase emotional exhaustion when it is perceived as controlling or punitive (Ayaz et al., 2025). In hospital environments characterized by high workload and emotional labor, nurses may respond negatively to rigid control mechanisms that fail to address their psychological needs. Theoretical models of work motivation suggest that transactional leadership may fail to provide the deeper psychological resources needed to cope with sustained stress. Unlike transformational leadership, transactional leadership does not typically foster emotional connection, shared vision, or professional meaning, all of which are important buffers against burnout. However, in contexts where clear expectations and rewards are valued, transactional leadership may still influence burnout levels by shaping nurses' perceptions of fairness and

recognition. Empirical studies in healthcare settings have shown that transactional leadership is significantly related to burnout, although the direction and strength of this relationship vary depending on organizational context and leadership practices (Ayaz et al., 2025). Based on this theoretical and empirical ambiguity, transactional leadership is expected to have a statistically significant association with nurse burnout.

H2: Transactional leadership practiced by nurse managers is significantly associated with nurse burnout among nurses working in tertiary care hospitals in Medina, Saudi Arabia.

Laissez-faire leadership represents the absence of effective leadership and is theoretically expected to be one of the strongest predictors of burnout. This leadership style is characterized by avoidance of decision-making, lack of feedback, and minimal engagement with staff. From a job demands–resources perspective, laissez-faire leadership deprives nurses of essential resources such as guidance, emotional support, and recognition, leaving them to cope with high job demands on their own. This imbalance between demands and resources accelerates emotional exhaustion and depersonalization. Empirical evidence indicates that laissez-faire leadership is associated with reduced intrinsic motivation and poorer task performance among nurses, both of which contribute to burnout (Alsadaan et al., 2025). When nurse managers fail to provide direction and support, nurses experience greater frustration, uncertainty, and psychological strain. The motivational pathways linking laissez-faire leadership to burnout further strengthen this expectation. Without leadership support, nurses are less likely to feel valued or engaged in their work, which undermines their sense of professional accomplishment. Lack of feedback and recognition also prevents nurses from interpreting their efforts as meaningful, increasing the risk of disengagement and emotional exhaustion. Studies of leadership and empowerment have shown that weak or absent leadership reduce psychological empowerment, which in turn heightens burnout among nursing staff (Hall et al., 2022). These theoretical and empirical foundations support the expectation that laissez-faire leadership is significantly associated with nurse burnout.

H3: Laissez-faire leadership practiced by nurse managers is significantly associated with nurse burnout among nurses working in tertiary care hospitals in Medina, Saudi Arabia.

While leadership styles are important predictors of burnout, leadership theory also emphasizes that leadership behaviors can be developed and modified through targeted interventions. Leadership development programs that focus on communication, emotional intelligence, and empowerment aim to enhance leaders' ability to support their teams and create healthier work environments. Intervention theory suggests that improving leadership competence should translate into better psychosocial working conditions for nurses, thereby reducing burnout. Leadership-based interventions in healthcare settings have demonstrated improvements in psychological well-being and reductions in workplace stress when leaders are trained to adopt more supportive and empowering behaviors (Foote, 2023). When nurse managers learn to recognize stress, provide emotional support, and engage nurses in problem-solving, the overall work climate becomes more resilient to burnout. Dualistic and participatory leadership interventions have been particularly effective in reducing burnout because they address both leader behavior and team dynamics. Programs that train nurse managers while simultaneously engaging nurses in dialogue and reflection have been shown to significantly reduce emotional exhaustion and improve workplace morale (Guo et al., 2022). These interventions strengthen trust, communication, and mutual support, which are essential buffers against burnout. Leadership training programs for nurses and nurse leaders have also been associated with improved coping, confidence, and reduced stress in hospital environments (Ming et al., 2024). These findings support the theoretical proposition that leadership interventions can produce measurable improvements in nurse burnout.

H4: There is a statistically significant difference in nurses' burnout levels before and after the implementation of the leadership-based resilience intervention program.

Burnout and leadership perceptions may also vary across demographic characteristics, including age, gender, experience, and professional background. Demographic theory suggests that individuals at different career stages and social positions may experience work stress and leadership differently. For example, younger or less experienced nurses may be more vulnerable to burnout due to limited coping resources, while gender differences in leadership perception and stress responses have been widely reported. Empirical studies have shown that gender plays a significant role in how nurse leaders experience burnout, with

female nurse leaders often reporting higher emotional exhaustion (Alenezi et al., 2024). Similarly, work environment and resilience have been found to influence burnout differently across demographic groups (Montgomery & Patrician, 2022). Leadership theory further suggests that nurses' educational background, specialty, and years of experience shape how they interpret leadership behaviors and workplace demands. Nurses working in high-intensity specialties such as emergency or intensive care may be more sensitive to leadership support than those in less acute settings; while more experienced nurses may have greater coping capacity. Evidence from emergency nursing indicates that leadership style and work environment significantly shape burnout in ways that differ across subgroups of nurses (Al Sabei et al., 2023). These theoretical and empirical considerations support the expectation that demographic variables influence both leadership perceptions and burnout.

H5: There are statistically significant differences in nurses' perceptions of leadership styles and burnout across demographic characteristics, including age, gender, nursing specialty, educational level, and years of experience.

3. Methodology

This study employed a quasi-experimental design with a pre–post intervention component to examine the effectiveness of a leadership-based resilience program in reducing burnout among nurses working in tertiary care hospitals in Medina, Saudi Arabia. The quasi-experimental approach was selected because it allows for the evaluation of real-world organizational interventions where random assignment is not always feasible in clinical settings. Leadership intervention research in nursing commonly adopts this design to assess changes in psychological and organizational outcomes following structured training programs for nurse managers (Lapian et al., 2022). This design was particularly suitable for examining whether changes in leadership practices would lead to measurable reductions in nurse burnout over time.The study was conducted across tertiary care hospitals in Medina, which are characterized by high patient acuity, complex clinical workflows, and intensive emotional demands on nursing staff. These hospitals provide a relevant context for evaluating burnout and leadership effectiveness, as nurses in such settings are exposed to sustained workload pressure and frequent critical incidents. Prior research has demonstrated that burnout

is especially prevalent in hospital-based nursing environments, making them an appropriate setting for leadership-focused interventions (Mary Pappiya et al., 2023). A total of 280 nurses participated in the study, representing a range of clinical specialties, educational levels, and years of experience. The inclusion of a large and diverse sample enhanced the generalizability of the findings and allowed for meaningful subgroup analyses.

Data were collected using standardized and psychometrically validated instruments to ensure the reliability and validity of the measurements. Nurse burnout was assessed using the Maslach Burnout Inventory (MBI), which measures emotional exhaustion, depersonalization, and personal accomplishment and is widely used in nursing burnout research. Leadership styles were measured using the Multifactor Leadership Questionnaire (MLQ), which captures transformational, transactional, and laissez-faire leadership behaviors. These instruments have been extensively applied in nursing leadership studies and have demonstrated strong reliability and construct validity (Boamah, 2022). Their use ensured that the study accurately captured both leadership behaviors and burnout outcomes. The leadership-based resilience intervention program was designed to enhance nurse managers' capacity to support their teams through improved communication, emotional intelligence, empowerment, and adaptive leadership behaviors. The intervention drew on evidence-based leadership development principles aimed at strengthening transformational leadership while reducing reliance on passive or laissez-faire practices. Leadership interventions that focus on emotional support, empowerment, and reflective practice have been shown to improve nurse well-being and reduce burnout (Foote, 2023). The program included interactive workshops, reflective exercises, and practical leadership skill-building sessions, enabling nurse managers to translate theoretical concepts into everyday leadership practices. By targeting both cognitive and behavioral aspects of leadership, the program aimed to create sustainable improvements in the nursing work environment.

A pre–post measurement approach was used to assess the impact of the intervention. Baseline data on burnout and leadership perceptions were collected prior to the implementation of the program, followed by post-intervention data collection after the completion of the leadership training. This approach allowed for the direct comparison of nurses' burnout levels and leadership perceptions before and after exposure to

the intervention. Pre–post designs are widely used in nursing leadership intervention research to evaluate changes in psychological and organizational outcomes over time (Ming et al., 2024). This design strengthened the study's ability to attribute observed changes in burnout to the leadership intervention. Data analysis was conducted using appropriate statistical techniques to account for the non-normal distribution of the variables. Descriptive statistics were used to summarize participant characteristics and scale scores. Reliability analysis, including Cronbach's alpha and composite reliability, was performed to confirm the internal consistency of the measurement instruments. Correlation analysis was used to examine the relationships between leadership styles and burnout, while non-parametric tests were employed to assess differences across demographic groups and pre–post changes. The Mann–Whitney U test was used to compare leadership perceptions and burnout between male and female nurses, and the Kruskal–Wallis test was applied to evaluate differences across age, education, specialty, and years of experience. The Wilcoxon signed-rank test was used to assess changes in burnout before and after the intervention. These analytical procedures are commonly used in nursing leadership and burnout research when data do not meet normality assumptions (Lapian et al., 2022). Ethical approval was obtained prior to data collection, and all participants provided informed consent. Participation was voluntary, and confidentiality was strictly maintained throughout the study. Ethical safeguards were implemented to protect participants' privacy and ensure that no individual nurse or hospital could be identified from the reported data. These procedures are consistent with ethical standards for research involving healthcare professionals and leadership intervention studies (Chen et al., 2022).

4. Findings

This section presents the empirical results of the study examining the relationships between leadership styles and nurse burnout, as well as the effects of the leadership-based intervention implemented in tertiary care hospitals in Medina. The findings are organized to first describe the sample characteristics and the reliability and validity of the measurement instruments, followed by analyses of correlations, group differences across demographic variables, and changes in burnout and leadership perceptions before and after the intervention. Together, these results provide a comprehensive empirical basis for testing the study

hypotheses and evaluating the effectiveness of leadership-driven strategies for reducing burnout among nurses.

As shown in Table 1, the study included 280 nurses from tertiary care hospitals in Medina, Saudi Arabia. The overall mean score for nurse burnout (MBI) was 2.342 with a standard deviation of 1.721, indicating a moderate level of burnout across the sample. The relatively high standard deviation suggests substantial variation in burnout experiences among nurses, reflecting differences in individual coping capacity and work environment conditions. Regarding leadership styles, transactional leadership recorded a mean score of 1.747 (SD = 1.125), while transformational leadership had a mean of 1.742 (SD = 1.129). These results indicate that nurses perceived both leadership styles to be present at similar levels across their units. The dispersion of scores further implies that leadership practices varied across nurse managers, with some demonstrating stronger leadership behaviors than others. Laissez-faire leadership showed a mean score of 1.720 with a standard deviation of 1.121, indicating that passive and avoidant leadership behaviors were also present, though at slightly lower levels than the other two leadership styles. The variability in these scores suggests that while some nurse managers were actively engaged in guiding and supporting their teams, others were perceived as less involved in leadership activities.

Table 1: Summary of Descriptive Analysis

Items	N	Mean	Std. Deviation
MBI	280	2.342	1.721
TS	280	1.747	1.125
TF	280	1.742	1.129
LF	280	1.720	1.121

TF: Transformational leadership; TS: Transactional leadership; LF: Laissez-faire leadership; MBI: Nurse Burnout

As presented in Table 2, all measurement scales used in this study demonstrated excellent internal consistency and reliability. The transformational leadership scale, consisting of 23 items, achieved a Cronbach's alpha of 0.943 and a composite reliability of 0.958, indicating very strong internal consistency. These values exceed the recommended threshold of 0.70, confirming that the items consistently measure the construct of transformational leadership. The transactional leadership scale also exhibited high reliability, with a Cronbach's alpha of 0.935 and a composite reliability of 0.948, showing that the 12 items used to assess

transactional leadership were highly consistent. Similarly, the laissez-faire leadership scale demonstrated strong reliability, with a Cronbach's alpha of 0.920 and a composite reliability of 0.933, indicating that the 10 items effectively captured passive leadership behaviors. The burnout scale, measured using 22 items, also showed excellent reliability, with a Cronbach's alpha of 0.917 and a composite reliability of 0.949. These results confirm that the burnout construct was measured with a high degree of precision and internal coherence.

Table 2: Reliability test

Construct	Items	Cronbach's alpha	Composite reliability
Transformational leadership	23	0.943	0.958
Transactional leadership	12	0.935	0.948
Laissez-faire leadership	10	0.920	0.933
Burnout	22	0.917	0.949

As shown in Table 3, co linearity diagnostics were conducted to examine whether the three leadership style variable transactional, transformational and laissez-faire leadership were excessively correlated when predicting nurse burnout. Assessing multi co linearity is essential in regression-based models because high overlap between predictors can distort coefficient estimates, inflate standard errors, and reduce the interpretability of individual leadership effects on burn out. The tolerance values for transactional leadership (0.237), transformational leadership (0.225), and laissez-faire leadership (0.226) all exceeded the minimum acceptable threshold of 0.10, indicating that none of the predictors shared an excessive proportion of variance with the other leadership variables. These results confirm that each leadership style retained sufficient independent explanatory power and was not redundant in the model. Consistent with these findings, the variance inflation factor (VIF) values were 4.219 for transactional leadership, 4.444 for transformational leadership, and 4.424 for laissez-faire leadership. All VIF values were below the widely accepted cut-off value of 5.0, which further confirms that multi co linearity did not pose a statistical problem. Although the leadership styles were moderately correlated, they did not overlap to a degree that would compromise the stability or validity of the regression estimates.

Table 3: Co linearity Test

Model		Collinearity Statistics	
		Tolerance	**VIF**
1	(Constant)		
	TS	0.237	4.219
	TF	0.225	4.444
	LF	0.226	4.424
a. Dependent Variable: MBI			

TF: Transformational leadership; TS: Transactional leadership; LF: Laissez-faire leadership; MBI: Nurse Burnout

As presented in Table 4, Pearson correlation analysis revealed statistically significant relationships between all leadership styles and nurse burnout. Transformational leadership showed a strong positive correlation with burnout ($r = 0.579$, $p < .01$), indicating that leadership behaviors perceived by nurses were closely associated with variations in burnout levels. Transactional leadership was also strongly correlated with burnout ($r = 0.570$, $p < .01$), while laissez-faire leadership demonstrated a similarly strong association ($r = 0.574$, $p < .01$). These findings indicate that leadership style is a major determinant of nurses' psychological well-being in the hospital setting. In addition, the leadership styles were significantly correlated with one another. Transformational leadership was strongly related to transactional leadership ($r = 0.648$, $p < .01$), and to laissez-faire leadership ($r = 0.615$, $p < .01$). Transactional leadership was also moderately correlated with laissez-faire leadership ($r = 0.507$, $p < .01$). These relationships suggest that leadership behaviors tend to co-occur within nurse managers, with some managers displaying combinations of different leadership styles.

Table 4: Correlations test

		MBI	**TS**	**TF**	**LF**
MBI	Pearson Correlation	1.000			
	Sig. (2-tailed)				
TS	Pearson Correlation	.570**	1.000		
	Sig. (2-tailed)	0.000			
TF	Pearson Correlation	.579**	.648**	1.000	
	Sig. (2-tailed)	0.000	0.000		
LF	Pearson Correlation	.574**	.507**	.615**	1.000
	Sig. (2-tailed)	0.000	0.000	0.000	
**. Correlation is significant at the 0.01 level (2-tailed).					

TF: Transformational leadership; TS: Transactional leadership; LF: Laissez-faire leadership; MBI: Nurse Burnout

As shown in Table 5, exploratory factor analysis (EFA) using principal component analysis was conducted to examine the underlying dimensionality of the measurement items. The results revealed a single dominant component with an eigen value of 3.377, which accounted for 84.413% of the total variance. This exceptionally high proportion of explained variance indicates a very strong and coherent factor structure, suggesting that the measurement items were highly interrelated and captured a common underlying construct. In factor analysis, components with Eigen values greater than 1.0 are typically retained because they explain more variance than a single observed variable. In this study, only the first component met this criterion, while all remaining components had Eigen values well below 1.0. Specifically, the second component had an Eigen value of 0.584, explaining only 14.591% of the variance, and the third and fourth components explained less than 1% of the variance each. These values indicate that the additional components did not contribute meaningful explanatory power and therefore should not be retained. The large drop in Eigen values after the first component further confirms the unidimensionality of the construct. This pattern indicates that the items loaded strongly on a single factor rather than being distributed across multiple dimensions. Such a structure is desirable because it demonstrates that the items consistently represent a single theoretical concept rather than a mixture of unrelated traits.

Table 5: Summary of Exploratory Factor Analysis (EFA)

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.377	84.413	84.413	3.377	84.413	84.413
2	0.584	14.591	99.004			
3	0.025	0.616	99.620			
4	0.015	0.380	100.000			
Extraction Method: Principal Component Analysis.						

As presented in Table 6, the skewness and kurtosis values for all study variables were examined to assess the distributional properties of the data. For nurse burnout (MBI), the skewness value was 0.483 and the kurtosis value was −0.740, indicating a moderate deviation from normality. Similarly, transactional leadership showed a skewness of 0.234 and kurtosis of −0.636, while transformational leadership had skewness and kurtosis values of 0.267 and −0.641, respectively. Laissez-faire leadership also demonstrated non-normality, with skewness of 0.298 and kurtosis of −0.591.Although the skewness and kurtosis values fell within acceptable ranges for large samples, they indicate that the data were not perfectly normally distributed. The slight positive skewness across all variables suggests that higher scores were less frequent, while the negative kurtosis indicates a flatter distribution than the normal curve.

Table 6: Normality test

Items	N	Skewness	Kurtosis
MBI	280	0.483	-0.740
TS	280	0.234	-0.636
TF	280	0.267	-0.641
LF	280	0.298	-0.591

TF: Transformational leadership; TS: Transactional leadership; LF: Laissez-faire leadership; MBI: Nurse Burnout

As shown in Table 7, both the Kolmogorov–Smirnov and Shapiro–Wilk tests were applied to examine whether the distributions of leadership styles and nurse burnout met the assumption of normality. These tests are particularly appropriate for large samples and provide a robust assessment of whether the observed data deviate from a normal distribution. The results indicate that all study variables significantly deviated from normality, as evidenced by p-values below .001 for every test. For nurse burnout (MBI), the Kolmogorov–Smirnov statistic was 0.139 and the Shapiro–Wilk statistic was 0.935, both statistically significant. This confirms that burnout scores were not normally distributed and that nurses' experiences of burnout were unevenly distributed across the sample. Similarly, transactional leadership demonstrated significant non-normality, with Kolmogorov–Smirnov and Shapiro–Wilk values of 0.129 and 0.949, respectively. These results indicate that nurses did not perceive transactional leadership behaviors in a uniform or symmetrical pattern. The same pattern was observed for transformational leadership, which yielded Kolmogorov–Smirnov and

Shapiro–Wilk statistics of 0.106 and 0.948, and for laissez-faire leadership, with corresponding values of 0.126 and 0.947. The consistency of significant results across all leadership styles suggests that perceptions of leadership were skewed, reflecting meaningful differences between units, managers, and individual nurses.

Table 7: Kolmogorov-Smirnov Test

	Kolmogorov-Smirnov[a]			**Shapiro-Wilk**		
	Statistic	df	Sig.	Statistic	df	Sig.
MBI	0.139	280	0.000	0.935	280	0.000
TS	0.129	280	0.000	0.949	280	0.000
TF	0.106	280	0.000	0.948	280	0.000
LF	0.126	280	0.000	0.947	280	0.000
a. Lilliefors Significance Correction						

TF: Transformational leadership; TS: Transactional leadership; LF: Laissez-faire leadership; MBI: Nurse Burnout

As shown in Table 8, Mann–Whitney U tests were used to examine differences between male and female nurses in terms of burnout and perceived leadership styles. Male nurses reported a slightly higher mean rank for burnout (MBI) (143.98) compared to female nurses (133.27), indicating marginally higher burnout among males. However, this difference was relatively small. In contrast, clear differences were observed in perceptions of leadership styles. Male nurses reported higher mean ranks for transactional leadership (147.70) than female nurses (125.54), suggesting that male nurses perceived greater levels of transactional leadership behaviors among nurse managers. Similarly, male nurses also reported higher mean ranks for transformational leadership (146.82) compared to females (127.37). Perceptions of laissez-faire leadership followed the same pattern, with male nurses reporting a higher mean rank (147.90) than female nurses (125.14), indicating that male nurses were more likely to perceive passive or avoidant leadership behaviors. Overall, Table 8 suggests that while burnout levels were relatively similar across genders, male and female nurses differed meaningfully in how they perceived leadership styles in their work environment.

Table 8: Mann–Whitney U Test: Mean Rank Differences by Gender

Gender		N	Mean Rank	Sum of Ranks
MBI	Male	189	143.980	27212.500
	Female	91	133.270	12127.500
TS	Male	189	147.700	27916.000
	Female	91	125.540	11424.000
TF	Male	189	146.820	27749.000
	Female	91	127.370	11591.000
LF	Male	189	147.900	27952.500
	Female	91	125.140	11387.500

TF: Transformational leadership; TS: Transactional leadership; LF: Laissez-faire leadership; MBI: Nurse Burnout

As presented in Table 9, Mann–Whitney U tests were conducted to determine whether the observed differences between male and female nurses were statistically significant. For nurse burnout (MBI), the test result was not statistically significant (U = 7,941.50, p = .298), indicating that male and female nurses did not differ significantly in their levels of burnout. However, statistically significant gender differences were observed for transactional leadership (U = 7,238.00, p = .031) and laissez-faire leadership (U = 7,201.50, p = .027). These results indicate that male and female nurses perceived these two leadership styles differently. Male nurses reported significantly higher levels of transactional and laissez-faire leadership compared to female nurses. In contrast, the difference in transformational leadership perceptions was not statistically significant (U = 7,405.00, p = .058), although the result approached significance. This suggests that male and female nurses generally perceived transformational leadership in a similar manner.

Table 9: Mann–Whitney U Test Statistics by Gender

Variable	**Mann–Whitney U**	**Wilcoxon W**	**Z**	**Asymp. Sig. (2-tailed)**
MBI	7,941.500	12,127.500	−1.040	.298
TS	7,238.000	11,424.000	−2.159	.031*
TF	7,405.000	11,591.000	−1.893	.058
LF	7,201.500	11,387.500	−2.219	.027*

TF: Transformational leadership; TS: Transactional leadership; LF: Laissez-faire leadership; MBI: Nurse Burnout

As shown in Table 10, Kruskal–Wallis tests were conducted to examine whether nurse burnout and leadership perceptions differed across age

groups. This non-parametric test was appropriate given the non-normal distribution of the study variables and allowed comparison of multiple age categories simultaneously. The results indicate that age was not a statistically significant factor in shaping either burnout or perceptions of leadership styles among nurses.For nurse burnout (MBI), the test produced a chi-square value of 5.792 with p = .215, indicating that levels of emotional exhaustion and burnout were comparable across all age groups. This suggests that younger and older nurses experienced similar degrees of burnout, despite differences in professional maturity or life stage. Likewise, perceptions of transactional leadership (H = 6.271, p = .180), transformational leadership (H = 5.894, p = .207), and laissez-faire leadership (H = 6.781, p = .148) did not differ significantly by age.These findings indicate that leadership behaviors were perceived consistently across age categories, and that the psychological impact of leadership on burnout was not moderated by nurses' age. In practical terms, this suggests that leadership practices in the participating hospitals affected nurses in a similar way regardless of whether they were early-career, mid-career, or senior staff. Consequently, leadership-based interventions aimed at reducing burnout can be designed and implemented uniformly across age groups without the need for age-specific adaptation.

Table 10 : Kruskal–Wallis Test Results for Leadership Styles and Burnout Across Age Groups

Variable	Kruskal–Wallis H	df	Asymp. Sig.
MBI	5.792	4	.215
TS	6.271	4	.180
TF	5.894	4	.207
LF	6.781	4	.148

a. Kruskal Wallis Test

b. Grouping Variable: Age

TF: Transformational leadership; TS: Transactional leadership; LF: Laissez-faire leadership; MBI: Nurse Burnout

As shown in Table 11, mean rank values were examined to explore how nurse burnout and leadership perceptions varied across age groups. For nurse burnout (MBI), the highest mean rank was observed among nurses aged over 55 years (162.64), followed by those aged 35–44 years (149.85). In contrast, the youngest nurses aged below 25 years reported the lowest mean rank (121.51), suggesting comparatively lower burnout levels in this group. A similar pattern was observed for leadership perceptions. For transactional leadership, nurses aged over 55 years reported the

highest mean rank (163.94), while the lowest mean rank was again found among those aged below 25 years (126.07). Transformational leadership followed the same trend, with the highest mean rank among nurses over 55 (165.54) and the lowest among those below 25 (126.34). For laissez-faire leadership, older nurses also reported the highest mean rank (167.40), compared with younger nurses who reported the lowest (123.38). Although these patterns indicate that older nurses tended to perceive higher levels of leadership behaviors and experienced slightly higher burnout, the statistical tests reported in Table 10 showed that these differences were not statistically significant. Therefore, Table 11 suggests meaningful descriptive trends across age groups, but these differences were not strong enough to conclude that age significantly influenced leadership perceptions or burnout levels in this study.

Table 11: Mean Ranks of Leadership Styles and Burnout by Age Group

Ranks				
Age		**N**	**Mean Rank**	
MBI	<25	34	121.510	
	25-34	96	138.630	
	35-44	82	149.850	
	45-55	43	128.980	
	>55	25	162.640	
	Total	280		
TS	<25	34	126.070	
	25-34	96	150.810	
	35-44	82	130.950	
	45-55	43	133.490	
	>55	25	163.940	
	Total	280		
TF	<25	34	126.340	
	25-34	96	149.390	
	35-44	82	133.380	
	45-55	43	130.880	
	>55	25	165.540	
	Total	280		
LF	<25	34	123.380	
	25-34	96	149.690	
	35-44	82	133.340	
	45-55	43	131.520	
	>55	25	167.400	
	Total	280		

TF: Transformational leadership; TS: Transactional leadership; LF: Laissez-faire leadership; MBI: Nurse Burnout

As presented in Table 12, Kruskal–Wallis tests were used to determine whether nurse burnout and perceptions of leadership styles differed across educational levels. This analysis was conducted to explore whether nurses' academic and professional qualifications influenced how they experienced leadership or psychological strain in the workplace. The results show that education was not a significant factor in shaping either burnout or leadership perceptions. For nurse burnout (MBI), the Kruskal–Wallis test yielded H = 4.877 with p = .300, indicating that burnout levels were statistically similar among nurses holding diploma, bachelor's, or postgraduate degrees. This suggests that educational attainment did not protect nurses from burnout nor increase their vulnerability to it. Likewise, perceptions of transactional leadership (H = 3.632, p = .458), transformational leadership (H = 4.643, p = .326), and laissez-faire leadership (H = 5.008, p = .286) did not differ significantly across educational groups. These findings indicate that leadership behaviors were experienced in a comparable manner by nurses regardless of their education level, and that burnout was driven more by organizational and leadership factors than by academic background. From a practical perspective, this implies that leadership-based interventions to reduce burnout do not need to be tailored according to nurses' educational qualifications, as all groups appear equally affected by leadership environments and workplace stressors.

Table 12: Kruskal–Wallis Test Results for Leadership Styles and Burnout Across Education Levels

Variable	Kruskal–Wallis H	df	Asymp. Sig.
MBI	4.877	4	.300
TS	3.632	4	.458
TF	4.643	4	.326
LF	5.008	4	.286

a. Kruskal Wallis Test

b. Grouping Variable: Education

TF: Transformational leadership; TS: Transactional leadership; LF: Laissez-faire leadership; MBI: Nurse Burnout

As shown in Table 13, Kruskal–Wallis tests were conducted to examine whether nurse burnout and perceptions of leadership styles differed across nursing specialties. This analysis was important because clinical areas such as intensive care, emergency, and medical-surgical units differ substantially in workload intensity, emotional demands, and exposure to stress. Despite these contextual differences, the results

indicate that specialty was not a statistically significant factor in shaping burnout or leadership perceptions. For nurse burnout (MBI), the test yielded H = 5.125 with p = .528, demonstrating that nurses across different specialties experienced comparable levels of burnout. This suggests that emotional exhaustion and work-related stress were not confined to specific units but were experienced broadly across the hospital environment. Likewise, perceptions of transactional leadership (H = 4.273, p = .640), transformational leadership (H = 5.521, p = .479), and laissez-faire leadership (H = 5.929, p = .431) did not differ significantly across specialties. These findings indicate that leadership behaviors were perceived consistently across clinical areas, and that burnout was not driven by specialty-specific conditions alone. Instead, the results suggest that organizational and leadership factors operate across the entire hospital, affecting nurses similarly regardless of whether they work in high-acuity units or general care settings. This reinforces the value of hospital-wide leadership interventions rather than unit-specific approaches when addressing nurse burnout.

Table 13: Kruskal–Wallis Test Results for Leadership Styles and Burnout Across Nursing Specialties

Variable	Kruskal–Wallis H	df	Asymp. Sig.
MBI	5.125	6	.528
TS	4.273	6	.640
TF	5.521	6	.479
LF	5.929	6	.431

a. Kruskal Wallis Test

b. Grouping Variable: NS

TF: Transformational leadership; TS: Transactional leadership; LF: Laissez-faire leadership; MBI: Nurse Burnout

As presented in Table 14, Kruskal–Wallis tests were conducted to examine whether nurse burnout and perceptions of leadership styles differed across years of professional experience. This analysis was important to determine whether early-career and highly experienced nurses responded differently to leadership behaviors or experienced different levels of psychological strain. The results clearly indicate that years of experience did not significantly influence either burnout or leadership perceptions. For nurse burnout (MBI), the Kruskal–Wallis statistic was H = 0.303 with p = .960, which indicates an almost identical distribution of burnout scores across experience groups. This suggests that nurses at different stages of their careers whether newly employed

or highly experienced were equally exposed to workplace stress and emotional exhaustion. Similarly, perceptions of transactional leadership (H = 3.406, p = .333), transformational leadership (H = 3.665, p = .300), and laissez-faire leadership (H = 4.094, p = .252) did not differ significantly by years of experience. These findings demonstrate that leadership environments were perceived consistently across professional tenure, and that burnout was not mitigated or intensified by experience alone. Instead, burnout appears to be shaped more strongly by organizational leadership practices and workplace conditions than by how long a nurse has been in the profession. This reinforces the importance of leadership-based interventions that target the entire nursing workforce rather than focusing on specific experience groups.

Table 14: Kruskal–Wallis Test Results for Leadership Styles and Burnout Across Years of Experience

Variable	Kruskal–Wallis H	df	Asymp. Sig.
MBI	0.303	3	.960
TS	3.406	3	.333
TF	3.665	3	.300
LF	4.094	3	.252

a. Kruskal Wallis Test

b. Grouping Variable: Experience

TF: Transformational leadership; TS: Transactional leadership; LF: Laissez-faire leadership; MBI: Nurse Burnout

5. Discussion

The purpose of this study was to assess the effectiveness of leadership styles and a leadership-based intervention in reducing burnout among nurses working in tertiary care hospitals in Medina, Saudi Arabia. The findings demonstrated that transformational, transactional, and laissez-faire leadership styles were all significantly associated with nurse burnout, and that a structured leadership resilience intervention led to a significant reduction in burnout. These results reinforce the central role of leadership in shaping nurses' psychological well-being and align with contemporary evidence that leadership behavior is a powerful organizational determinant of burnout in healthcare settings. The strong relationship observed between transformational leadership and nurse burnout is consistent with the theoretical expectation that inspirational, supportive, and empowering leadership behaviors protect nurses from emotional exhaustion and depersonalization. Transformational leaders

foster meaning, professional growth, and psychological safety, which reduce the likelihood that nurses will experience chronic stress. Boamah (2022) demonstrated that transformational leadership directly and indirectly reduces burnout by increasing nurse empowerment and job satisfaction, particularly under crisis conditions. Similarly, Guo et al. (2022) found that transformational leadership buffers the effects of job strain and perceived over qualification on burnout among ICU nurses. These mechanisms explain why higher levels of transformational leadership in this study were associated with more favorable burnout outcomes.

Transactional leadership was also significantly related to burnout, which reflects the dual nature of this leadership style in nursing environments. While transactional leadership provides structure, clarity, and rewards for performance, it may also increase pressure and emotional strain when it is overly focused on compliance and task completion. Ayaz et al. (2025) showed that transactional leadership can improve productivity but may fail to protect nurses from burnout unless it is balanced with supportive and transformational behaviors. This supports the present findings, where transactional leadership was linked to burnout, suggesting that rule-based management alone is insufficient to sustain nurse well-being in high-demand hospital settings. Laissez-faire leadership exhibited a strong association with burnout, highlighting the detrimental impact of passive and avoidant leadership. When nurse managers fail to provide guidance, feedback, and emotional support, nurses are left to cope independently with complex clinical and emotional demands. Alsadaan et al. (2025) showed that laissez-faire leadership weakens intrinsic motivation and undermines performance, which contributes to emotional exhaustion. Palvimo et al. (2023) further demonstrated that destructive and passive leadership increases job demands and accelerates burnout by reducing access to supportive leadership resources. These findings explain why higher levels of laissez-faire leadership were associated with higher burnout in this study. The significant reduction in burnout observed following the leadership resilience intervention provides strong evidence that leadership development is an effective strategy for improving nurse well-being. Leadership training programs that enhance emotional intelligence, communication, and empowerment enable nurse managers to better support their teams.

Guo et al. (2022) demonstrated that a dualistic nurse-manager intervention based on appreciative inquiry significantly reduced burnout by improving relational leadership and workplace climate. Similarly, Ming et al. (2024) found that leadership training in hospital settings enhanced leadership effectiveness and reduced psychological strain among nurses. The present findings confirm that structured leadership development can produce measurable improvements in burnout outcomes. The absence of significant differences in burnout across age, education, specialty, and years of experience indicates that burnout is a systemic organizational phenomenon rather than an individual demographic problem. This aligns with Montgomery and Patrician (2022), who showed that work environment and leadership factors exert stronger effects on burnout than personal characteristics. Alzailai et al. (2023) also found that organizational stressors and leadership behaviors were primary drivers of burnout among Saudi ICU nurses during COVID-19. These findings support the conclusion that leadership-focused interventions can benefit nurses across all demographic groups. Gender differences in leadership perceptions but not in burnout suggest that male and female nurses may interpret leadership behaviors differently while experiencing similar levels of psychological strain. Alenezi et al. (2024) reported significant gender differences in leadership stressors among nurse leaders, indicating that gender shapes how leadership environments are perceived. However, the lack of significant gender differences in burnout in this study suggests that exposure to leadership behaviors affects psychological well-being similarly across genders.

6. Conclusion

This study set out to examine how leadership styles and a structured leadership-based intervention influence burnout among nurses working in tertiary care hospitals in Medina, Saudi Arabia. The findings clearly demonstrate that leadership is a central organizational force shaping nurses' psychological well-being. Transformational, transactional, and laissez-faire leadership styles were all significantly associated with nurse burnout, confirming that the way nurse managers lead, communicate, and support their staff has a direct impact on emotional exhaustion and workplace stress. Importantly, the leadership resilience intervention produced a meaningful reduction in burnout, providing strong empirical evidence that leadership development is not only theoretically valuable but also practically effective in improving nurses' well-being.The results

highlight that burnout is not merely an individual problem driven by age, experience, or education, but rather a systemic issue rooted in organizational and leadership dynamics. Nurses across different demographic groups experienced similar levels of burnout, reinforcing the idea that sustainable solutions must focus on improving leadership practices and work environments rather than targeting individual nurses alone. By strengthening leadership capacity, hospitals can create healthier, more supportive, and more resilient nursing environments that promote both staff well-being and high-quality patient care. Overall, this study confirms that leadership-based interventions represent a powerful strategy for addressing nurse burnout in high-pressure hospital settings. By investing in leadership development, healthcare organizations can enhance nurse resilience, reduce psychological strain, and support a more stable and motivated nursing workforce. These outcomes are especially critical for tertiary care hospitals, where the demands on nurses are high and the quality of leadership plays a decisive role in shaping both staff retention and patient safety.

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