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TRANSFORMATIONAL LEADERSHIP TRAINING PROGRAM AND ITS EFFECT ON NURSE MANAGERS' SKILLS

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Abstract

Transformational leadership (TFL) enables nurse managers to motivate nursing staff, strengthen teamwork, and foster innovation, yet many nurse managers assume their roles without structured leadership preparation. This study aimed to evaluate the effect of a TFL training program on nurse managers' knowledge and skills. A quasi-experimental one-group pretest–posttest design was conducted at a governmental specialist hospital in Makkah, Saudi Arabia, with a convenience sample of all 25 nurse managers. Data were collected using a personal characteristics data sheet, a 25-item TFL knowledge questionnaire (Cronbach's α = 0.95), and a 30-item TFL skills observational checklist covering five leadership practices (α = 0.89). The program comprised nine two-hour sessions (18 hours) delivered over six weeks, and outcomes were measured before, immediately after, and three months after the program. None of the nurse managers had previously attended TFL training. The mean total knowledge score increased from 11.76 ± 2.51 before the program to 21.84 ± 1.59 immediately after and 19.44 ± 2.03 at follow-up, while the mean total skills score increased from 12.52 ± 2.95 to 27.60 ± 7.44 and 26.20 ± 9.39, respectively ($p < 0.001$). The proportion with poor knowledge fell from 64% to 0%, with 64% retaining good knowledge at follow-up; poor skills fell from 92% to 0%, with 96% retaining a high skill level at follow-up. Knowledge and skills were strongly and positively correlated ($r = 0.87$, $p < 0.001$). Skills were significantly associated with gender ($p = 0.04$) but not with other personal characteristics. A structured TFL training program effectively improved and largely sustained nurse managers' leadership knowledge and skills and should be embedded in their continuing professional development. (Symbols: ± = standard deviation; α = Cronbach's alpha; r = Pearson's correlation coefficient; p = probability value.)

Index Terms: *Continuing Professional Development, Knowledge, Leadership Training, Nurse Managers, Nursing Administration, Quasi-Experimental Study, Saudi Arabia, Skills, Transformational Leadership.*

1. INTRODUCTION

Nurses are central to the delivery of safe, high-quality healthcare in Saudi Arabia. Under Saudi Vision 2030, the health sector has undergone a major transformation intended to improve service delivery, strengthen workforce capability, and respond to growing population needs; these reforms, together with an uneven regional distribution of the nursing workforce, have placed greater responsibility on nurses and, in particular, on nurse managers [1]. Nurse Managers shape the unit work environment,

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organize nursing activities, and influence staff motivation, performance, job satisfaction, and intention to stay [2]. Adopting an effective leadership style is therefore essential for both nursing practice and organizational outcomes. Transformational leadership (TFL) is an approach in which leaders inspire and motivate followers to pursue shared goals while supporting their personal and professional growth. It is commonly described through four components: idealized influence, through which leaders act as ethical role models; inspirational motivation, through which they articulate a compelling vision; intellectual stimulation, through which they challenge assumptions and encourage creativity; and individualized consideration, through which they attend to each follower's needs [3], [4]. In nursing, TFL has been associated with better quality of patient care, a healthier work environment, and improved patient outcomes [3], [4], as well as higher staff nurse retention [2] and greater nurse well-being, including higher job satisfaction and lower emotional exhaustion [5]. Evidence from Saudi Arabia underscores the relevance of TFL and the gaps in its application. An integrative review of nursing leadership in the Kingdom highlighted the need for structured leadership development for nurse managers [6]. In government hospitals in Hail, TFL was strongly associated with leadership effectiveness, staff satisfaction, and nurses' willingness to exert extra effort [7], and among clinical nurse managers it was positively associated with staff nurses' work engagement, leading the authors to recommend structured leadership training to enhance managers' practical skills [8]. Knowledge and skills are complementary components of leadership competence.

Adequate knowledge enables nurse managers to understand leadership approaches and to recognize appropriate ways of managing workplace situations, whereas practical skills allow them to translate this knowledge into effective communication, teamwork, problem-solving, and staff motivation [9], [10]. Knowledge alone, however, is insufficient unless it is converted into observable leadership behavior, and structured educational programs offer nurse managers an opportunity to develop both [11], [12]. Despite this, studies continue to report limited TFL knowledge and skills among nurse managers who have not received formal leadership preparation [13], [14], and few intervention studies in Saudi Arabia have measured nurse managers' actual (observed) leadership behaviors rather than self-reported perceptions, or examined whether gains persist after the training ends. Therefore, the present study aimed to evaluate the effect of a TFL training program on nurse managers' knowledge and skills. Two hypotheses were tested: H1, nurse managers' TFL knowledge scores after the training program will differ from their scores before it; and H2, nurse managers' observed TFL skills scores after the training program will differ from their scores before it.

2. MATERIALS AND METHODS

2.1 Study Design

A quasi-experimental, one-group pretest–posttest design with repeated measurements was used. Outcomes were measured at three time points: before the program (pre-program), immediately after the program (post-program), and three months after the program (follow-up).

2.2 Setting

The study was conducted at Alnoor Specialist Hospital in Makkah, Saudi Arabia, a major governmental hospital and trauma center that serves both residents and pilgrims. The hospital has 500 beds distributed across 25 departments, each managed by a head nurse and an assistant head nurse. Departments include intensive care, burns, emergency, operating rooms, day care, medical, surgical and isolation wards, orthopedics, chemotherapy, neurosurgery, endoscopy, angiography, home care, outpatient clinics, hemodialysis, and radiology.

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2.3 Sample

A convenience sample comprising all nurse managers working in the above departments who were able to read and write English was recruited. The final sample consisted of 25 nurse managers, all of whom completed the three assessments.

2.4 Data Collection Tools

Three tools developed by the investigators were used. Tool I: Personal characteristics data sheet recorded age, gender, marital status, educational qualification, years of experience in the hospital and in the current workplace, and previous attendance of TFL training.

Tool II: TFL knowledge questionnaire was developed on the basis of classical TFL theory and consisted of 25 multiple-choice items in four domains: the concept of TFL (six items), its importance (five items), its characteristics (seven items), and its components (seven items). Each correct answer scored one and each incorrect answer zero, giving a total score of 0–25. Total scores of 75% or more indicated good knowledge, 50% to less than 75% fair knowledge, and less than 50% poor knowledge.

Tool III: TFL skills observational checklist was developed on the basis of the five practices of exemplary leadership that underpin the Leadership Practices Inventory, which has been widely used to evaluate nursing leadership programs [15], [16]. It comprised 30 items equally distributed across five dimensions: model the way, inspire a shared vision, challenge the process, enable others to act, and encourage the heart. Each observed behavior was scored as done (one) or not done (zero), giving a total score of 0–30 (0–6 per dimension). Total scores of 75% or more indicated a high skill level, 50% to less than 75% a fair level, and less than 50% a poor level.

2.5 Validity and Reliability

Face and content validity were established by a panel of three experts in nursing administration from the Faculty of Nursing, Cairo University, who reviewed the tools for content coverage, clarity, wording, length, and format; minor rewording of some items was carried out accordingly. Internal consistency was high, with Cronbach's alpha coefficients of 0.95 for the knowledge questionnaire and 0.89 for the skills observational checklist.

2.6 Ethical Considerations

Ethical approval was obtained from the Scientific Research Ethics Committee of the Faculty of Nursing, Cairo University, and official permission was obtained from the hospital administration. After the purpose and nature of the study were explained, each nurse manager provided written informed consent. Participation was voluntary, participants could withdraw at any time without consequence, and confidentiality and anonymity were maintained by coding all data collection sheets.

2.7 Procedure and Training Program

The study was implemented in four phases, each aligned with one of the four components of TFL.

Preparatory Phase (Idealized Influence)

After a review of recent literature, the study tools were developed and tested for validity and reliability. A list of nurse managers and their work schedules was obtained, the study was explained, and consent was secured. Baseline data were then collected between the end of May and the end of June 2025. Completing the knowledge questionnaire took 25–30 minutes and was done during break time, while each nurse manager was directly observed by the investigator for 35–45 minutes using the skills checklist.

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Planning Phase (Inspirational Motivation)

The educational needs identified at baseline were used to design the program, which was reviewed by experts in nursing administration. The program aimed to enhance nurse managers' TFL knowledge and skills. Its objectives were to enable participants to: 1) define TFL and its importance in healthcare, 2) differentiate TFL from other leadership styles, 3) discuss its principles, characteristics, and components, and 4) apply advanced TFL techniques and analyze barriers to its application. The program comprised nine two-hour sessions (18 hours) covering, in sequence: TFL concepts and importance; characteristics of TFL and the difference between leadership and management; TFL versus other leadership styles; principles, advantages, and disadvantages of TFL; components of TFL; features and roles of the transformational leader in healthcare organizations; advanced TFL techniques and strategies (two sessions); and barriers to applying TFL. Teaching methods included interactive lectures, group discussion, and brainstorming, supported by handouts, PowerPoint presentations, and video recordings.

Implementation Phase (Intellectual Stimulation)

The program was delivered by the first author to nurse managers on both morning and afternoon shifts over six weeks, from early July to mid-August 2025. Each session began with an orientation to its objectives and ended with participant feedback.

Evaluation Phase (Individualized Consideration)

The same knowledge questionnaire and observational checklist were re-administered immediately after the program (September to mid-October 2025) and three months later (mid-January to mid-February 2026) to assess the sustainability of the program's effects.

2.8 Statistical Analysis

Data were analyzed using IBM SPSS Statistics version 29.0. Descriptive statistics comprised frequencies, percentages, means, and standard deviations. Differences in mean scores across the three assessment periods were tested with one-way analysis of variance (F), differences in knowledge and skill levels with the chi-square test (χ^2), and the relationship between knowledge and skills with Pearson's correlation coefficient (r). Relationships between personal characteristics and knowledge or skills scores were examined with F tests. A p-value of less than 0.05 was considered statistically significant.

3 RESULTS

3.1 Personal Characteristics

Table 1 shows that 72.0% of the nurse managers were aged 30 to less than 40 years, 52.0% were male, 88.0% were married, and 80.0% held a bachelor's degree in nursing. About one-third (32.0%) had 5 to less than 10 years of experience in the hospital, and 52.0% had 5 to less than 10 years in their current workplace. None of the nurse managers had previously attended a TFL training program.

Table 1: Personal Characteristics of the Nurse Managers (N = 25)

Characteristic	No.	%
Age (years)		
30 to < 40	18	72.0
40 to < 50	7	28.0
Gender		
Male	13	52.0
Female	12	48.0

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Marital status		
Single	3	12.0
Married	22	88.0
Educational level		
Bachelor's degree	20	80.0
Master's degree	5	20.0
Years of experience in the hospital		
< 5	3	12.0
5 to < 10	8	32.0
10 to < 15	7	28.0
≥ 15	7	28.0
Years of experience in the current workplace		
< 5	9	36.0
5 to < 10	13	52.0
10 to < 15	2	8.0
≥ 15	1	4.0
Previous TFL training		
Yes	0	0.0
No	25	100.0

TFL = transformational leadership.

3.2 Transformational Leadership Knowledge

Table 2 shows statistically significant differences in all four knowledge domains and in the total knowledge score across the three assessment periods ($p < 0.001$). The mean total score increased from 11.76 ± 2.51 before the program to 21.84 ± 1.59 immediately after it and remained well above baseline at follow-up (19.44 ± 2.03). The largest absolute gain was in the characteristics domain, which rose from 3.40 to 6.32.

Table 2: Nurse Managers' Transformational Leadership Knowledge Scores Across the Assessment Periods (N = 25)

Knowledge domain (maximum score)	Pre-program Mean ± SD	Post-program Mean ± SD	Follow-up Mean ± SD	F	p
Concept of TFL (6)	2.96 ± 0.60	5.36 ± 0.36	4.76 ± 0.48	6.52	< 0.001*
Importance of TFL (5)	2.32 ± 0.51	4.56 ± 0.28	4.00 ± 0.40	9.01	< 0.001*
Characteristics of TFL (7)	3.40 ± 0.71	6.32 ± 0.41	5.40 ± 0.57	8.10	< 0.001*
Components of TFL (7)	3.08 ± 0.69	5.60 ± 0.52	5.28 ± 0.57	6.57	< 0.001*
Total knowledge (25)	11.76 ± 2.51	21.84 ± 1.59	19.44 ± 2.03	7.55	< 0.001*

SD = standard deviation; F = one-way analysis of variance; TFL = transformational leadership. *Significant at $p < 0.05$.

3.3 Observed Transformational Leadership Skills

Table 3 presents the observed skills scores. All five dimensions and the total score differed significantly across the assessment periods ($p < 0.001$). The total skills score more than doubled, from 12.52 ± 2.95 before the program to 27.60 ± 7.44 immediately after it, and declined only slightly to 26.20 ± 9.39 at follow-up. The largest gain was observed in the challenge the process dimension (from 2.16 to 5.48). At the item level, the greatest improvements were seen in developing cooperative relationships among staff (0.20 to 1.00), taking the initiative in anticipating and responding to change (0.28 to 0.96), and showing others how their interests can be realized (0.28 to 0.88, rising further to 0.96 at follow-

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up). Following through on promises and commitments and praising nurses for a job well done reached the maximum mean score of 1.00 at follow-up.

Table 3: Nurse Managers' Observed Transformational Leadership Skills Scores across the Assessment Periods (N = 25)

Skills dimension (maximum score)	Pre-program Mean ± SD	Post-program Mean ± SD	Follow-up Mean ± SD	F	p
Model the way (6)	2.56 ± 0.60	5.56 ± 1.53	5.20 ± 1.78	14.28	< 0.001*
Inspire a shared vision (6)	2.32 ± 0.58	5.52 ± 1.47	5.36 ± 1.79	18.70	< 0.001*
Challenge the process (6)	2.16 ± 0.58	5.48 ± 1.66	5.24 ± 1.96	17.76	< 0.001*
Enable others to act (6)	2.68 ± 0.58	5.56 ± 1.26	5.20 ± 2.01	16.93	< 0.001*
Encourage the heart (6)	2.80 ± 0.59	5.48 ± 1.52	5.20 ± 1.85	11.22	< 0.001*
Total skills (30)	12.52 ± 2.95	27.60 ± 7.44	26.20 ± 9.39	15.78	< 0.001*

SD = standard deviation; F = one-way analysis of variance. *Significant at $p < 0.05$.

3.4 Knowledge and Skill Levels

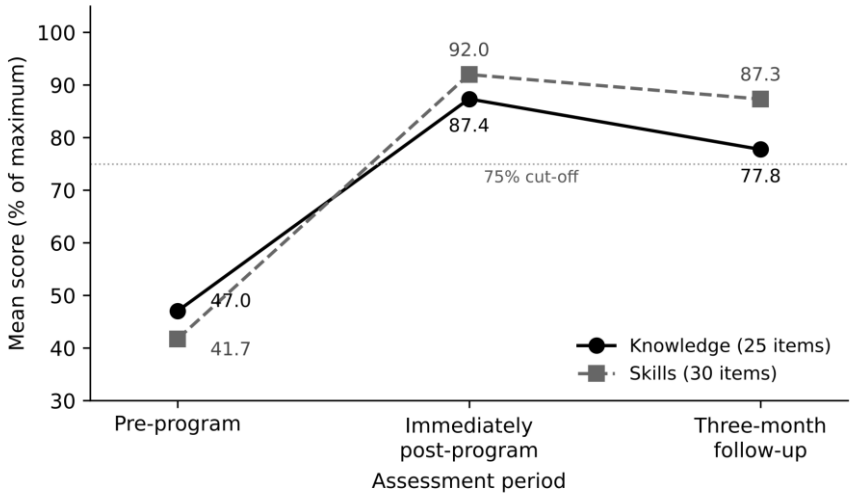

Figure 1: Mean Total Knowledge And Skills Scores, Expressed As a Percentage of the Maximum Possible Score, Before, Immediately After, And Three Months After The Training Program. The Dotted Line Marks The 75% Cut-Off for Good Knowledge and a High Skill Level

As shown in Table 4 and Fig. 1, before the program 64.0% of nurse managers had poor knowledge and none had good knowledge, whereas all (100.0%) achieved good knowledge immediately after the program. At follow-up, 64.0% maintained good knowledge and the remaining 36.0% had fair knowledge ($\chi^2 = 64.4$, $p < 0.001$). Similarly, 92.0% demonstrated poor skills before the program, all (100.0%) demonstrated a high skill level immediately afterward, and 96.0% maintained a high level at follow-up ($\chi^2 = 72.5$, $p < 0.001$).

Table 4: Levels of Transformational Leadership Knowledge and Skills across the Assessment Periods (N = 25)

Level	Pre-program		Post-program		Follow-up		χ^2 (p)
	No.	%	No.	%	No.	%	
Knowledge							
Poor (< 50%)	16	64.0	0	0.0	0	0.0	64.4
Fair (50% to < 75%)	9	36.0	0	0.0	9	36.0	(< 0.001*)

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Good (≥ 75%)	0	0.0	25	100.0	16	64.0	
Skills							
Poor (< 50%)	23	92.0	0	0.0	0	0.0	72.5
Fair (50% to < 75%)	2	8.0	0	0.0	1	4.0	(< 0.001*)
High (≥ 75%)	0	0.0	25	100.0	24	96.0	

χ^2 = chi-square test. *Significant at $p < 0.05$.

3.5 Correlation between Knowledge and Skills

A strong, positive, and statistically significant correlation was found between nurse managers' TFL knowledge and skills scores ($r = 0.87$, $p < 0.001$).

3.6 Relationships with Personal Characteristics

Table 5 shows that nurse managers' knowledge scores were not significantly related to any personal characteristic across the assessment periods ($p > 0.05$). Skills scores were significantly related to gender ($F = 2.80$, $p = 0.04$), with female nurse managers scoring higher than male nurse managers at every time point (pre-program 13.17 vs 11.92; post-program 28.97 vs 26.23; follow-up 27.52 vs 24.92). No other personal characteristic was significantly related to skills ($p > 0.05$).

Table 5: Relationships between Nurse Managers' Personal Characteristics and Their Transformational Leadership Knowledge and Skills (N = 25)

Personal characteristic	Knowledge		Skills	
	F	p	F	p
Gender	0.01	0.90	2.80	0.04*
Age	0.05	0.80	0.01	0.80
Marital status	0.30	0.50	0.01	0.90
Educational level	0.40	0.50	0.03	0.90
Years of experience in the hospital	0.07	0.90	0.03	0.90
Years of experience in the current workplace	0.04	0.90	0.08	0.90

F = F test across the three assessment periods. *Significant at $p < 0.05$.

4. DISCUSSION

This study evaluated a structured TFL training program for nurse managers in a Saudi governmental hospital. The program produced significant improvements in both knowledge and directly observed leadership skills, and most of these gains were sustained three months later. Both hypotheses were therefore supported. The finding that none of the nurse managers had previously attended TFL training, and that most had poor knowledge and skills at baseline, is noteworthy. It suggests that leadership preparation in many hospitals still focuses on clinical and administrative training rather than on leadership development. Similar gaps have been reported in Egypt, where most nursing managers had not attended leadership training and had low TFL skills scores [13], and in Nigeria, where nurse managers had limited understanding of TFL and its components [14]. These findings are also consistent with calls from Saudi researchers for formal leadership development for nurse managers [6], [8]. Most nurse managers in the present study were relatively young (30 to less than 40 years) and mid-career, a group for whom early leadership development may have a long-term effect.

The significant improvement in all knowledge domains, with every participant reaching a good level immediately after the program, can be attributed to content that was tailored to needs identified at baseline and directly linked to participants' managerial responsibilities. This agrees with Moustafa Saleh et al. [17], who reported a highly significant increase in nurse managers' knowledge after an educational intervention that persisted at three-month follow-up, and with other studies showing

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significant gains in head nurses' and nursing leaders' TFL knowledge after structured programs [18], [19]. Emam et al. [20] likewise found that leadership knowledge improved immediately after a development program and was maintained at follow-up. Omer [21] similarly found that leadership knowledge remained significantly higher than baseline three months after a leadership development program. Nevertheless, the slight decline in knowledge at three months, when 36% of participants returned to a fair level, suggests that periodic refresher sessions may be needed to consolidate learning. The most important contribution of this study is that skills were measured by direct observation rather than self-report. Significant improvements occurred in all five leadership practices. For model the way, gains in following through on commitments and setting a personal example are consistent with Medero et al. [15], who reported significant improvement in this practice after a charge nurse leadership program, and with the Saudi Raedwoon program, which strengthened participants' ability to act as role models [22]. Improvements in inspire a shared vision, including talking about future trends and encouraging nurses to embrace the vision, agree with van Dongen et al. [23], and the high levels of this practice reported among nurse managers in the Riyadh Second Health Cluster [16].

The challenge the process dimension showed the greatest gain, particularly in taking the initiative in anticipating and responding to change. This may reflect the program's emphasis on critical thinking and proactive rather than reactive management, and agrees with Hafsteinsdóttir et al. [24], who found the largest improvement in this dimension after a leadership program, and with Mahmoudirad and Akbari [25], who identified supporting change as a core strategy of transformational nursing managers. The marked improvements in enable others to act, especially in developing cooperative relationships and actively listening to diverse views, and in encourage the heart, especially in recognizing nurses' contributions, are also consistent with previous intervention studies [15], [24]. In contrast, studies of nurse managers without leadership training have rated feedback and rewards as the weakest aspects of their leadership [26], [27], which highlights the value of explicitly training these behaviors. Overall, 96% of nurse managers maintained a high skill level at three months, a stronger retention than that of knowledge. One explanation is that, once applied in daily managerial practice, leadership behaviors become habitual and are reinforced by positive staff responses. Studies conducted in Qatar and the Philippines have similarly reported high TFL scores among nurse leaders [28], [29], whereas moderate levels have been reported in settings without structured leadership development [30]. These contrasts support the view that TFL competencies can be developed through training rather than being fixed personal traits.

The strong positive correlation between knowledge and skills ($r = 0.87$) suggests that understanding TFL principles makes it easier for nurse managers to apply them. This is consistent with Pérez-González et al. [10], who identified knowledge as a core component of leadership competency, and with Shurab et al. [11], who found that a structured educational program improved both knowledge and managerial competencies. It also supports Bookey-Bassett et al. [9], who emphasized combining theoretical content with practical application in leadership education. Personal characteristics were largely unrelated to outcomes, suggesting that the program was equally beneficial regardless of age, marital status, education, or experience. This agrees with Saudi studies reporting no significant differences in TFL by age, education, or marital status [8], [31]. The significant association between gender and skills, in favor of female nurse managers, partially agrees with Alreshidi et al. [22], who found that female nurses scored higher on inspiring a shared vision, challenging the process, and encouraging the heart, but contrasts with Alrashidi et al. [7], who reported higher TFL among male nurse managers. Such inconsistencies may reflect differences in organizational culture, role expectations, and opportunities to practice leadership, and they warrant further investigation with larger samples.

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4.1 Limitations

This study had several limitations. The one-group design without a control group limits causal inference, as improvements may partly reflect maturation, testing effects, or concurrent organizational influences. The small convenience sample from a single hospital limits generalizability. Skills were observed by the investigator who delivered the program, which may have introduced observer bias, and participants' awareness of being observed may have influenced their behavior (the Hawthorne effect). Finally, the three-month follow-up does not establish whether the gains persist in the long term or translate into staff and patient outcomes.

5. CONCLUSION

A structured, needs-based TFL training program significantly improved nurse managers' knowledge and directly observed leadership skills across all five leadership practices, and most of these gains were maintained after three months. The strong link between knowledge and skills indicates that leadership education which combines theory with practical application can help nurse managers translate understanding into behavior. Because the benefits were largely independent of personal characteristics, such programs can be offered to all nurse managers, which is particularly relevant as Saudi healthcare organizations pursue the workforce goals of Vision 2030.

Based on These Findings, the Following Recommendations Are Made:

1) Hospital and nursing administrators should integrate structured TFL training into the continuing professional development and orientation of nurse managers.
2) Refresher sessions, mentorship, and peer support should be provided to sustain knowledge and support the application of TFL in daily practice.
3) Nurse Managers should be encouraged to involve staff in decision-making, support innovation, and adopt formal systems for recognizing nurses' contributions.
4) TFL concepts and experiential learning methods, such as simulation, role-play, and case studies, should be incorporated into undergraduate and postgraduate nursing administration curricula.
5) Future research should use randomized controlled or multi-site designs with larger samples, independent and blinded observers, and longer follow-up, and should examine the effect of TFL training on nurses' engagement and retention and on patient outcomes.

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