

Effect of Head Nurses' Authentic Leadership Training Program on Nurses' Innovative

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Abstract

Background: Authentic leadership is characterized by leaders who act consistently with their values and beliefs while fostering trust, empowerment, and psychological safety among employees. Such leadership creates a supportive work environment that promotes nurses' innovative behavior and enhances work motivation. **Aim:** To determine the effect of an authentic leadership training program for head nurses on nurses' innovative behavior and work motivation at Hafar Al-Batin Central Hospital, Saudi Arabia. **Methods:** A quasi-experimental design was conducted in all departments of Hafar Al-Batin Central Hospital. The study included 97 head nurses and 114 staff nurses. Data were collected using the Authentic Leadership Knowledge Questionnaire, Authentic Leadership Self-Assessment Questionnaire, Innovative Work Behavior Questionnaire, and Work Motivation Questionnaire. **Results:** The mean score of authentic leadership knowledge improved significantly from 11.39 ± 3.63 before the intervention to 14.34 ± 2.13 immediately after the program and 14.44 ± 2.02 at the three-month follow-up. Similarly, the mean authentic leadership perception score increased from 53.20 at baseline to 70.76 immediately post-intervention. Nurses' innovative work behavior improved from 30.97 before the program to 39.25 immediately after the intervention, while work motivation increased from 42.39 to 65.32. These improvements were statistically significant across all program phases. **Conclusion:** The authentic leadership training program significantly improved head nurses' authentic leadership knowledge and leadership practices, which were associated with enhanced nurses' innovative work behavior and work motivation. Integrating authentic leadership training into nursing leadership development programs is recommended to foster innovation, motivation, and positive organizational outcomes in healthcare settings.

Keywords: Authentic Leadership, Nurses' Innovative Behavior, Work Motivation.

Introduction

Leadership is a fundamental element of nursing practice that influences the quality of patient care, staff performance, and organizational outcomes. Effective nurse leaders inspire, mentor, and empower nursing teams while fostering ethical practice, professional growth, and collaborative working environments. Through supportive leadership, nurses become more confident, engaged, and willing to participate in improving healthcare services, ultimately enhancing patient outcomes and organizational performance (Dirik & Seren Intepeler, 2024). Leadership development programs therefore play a critical role in strengthening head nurses' leadership competencies, promoting teamwork, and increasing nurses' motivation and professional commitment (Huang and Zhang, 2024).

Among contemporary leadership approaches, authentic leadership has received increasing attention because it emphasizes self-awareness, transparency, ethical decision-making, and consistency between leaders' values and behaviors. Authentic leaders build trusting relationships with their staff by encouraging openness, fairness, and mutual respect, creating psychologically safe work environments where nurses feel valued and empowered. This leadership style is characterized by four essential components: self-awareness, relational transparency, balanced processing, and an internalized moral perspective, all of which enable leaders to make objective decisions while maintaining ethical standards. Consequently, authentic leadership has become particularly relevant in nursing, where effective communication, teamwork, and ethical decision-making are essential for delivering high-quality patient care (Abousoliman & Hamed, 2024).

Despite its recognized advantages, implementing authentic leadership within healthcare organizations remains challenging because of heavy workloads, hierarchical organizational structures, and stressful clinical environments that may limit open communication and transparency. Developing authentic leadership competencies through structured educational programs may therefore help nurse leaders overcome these barriers by strengthening self-awareness, communication skills, and ethical leadership practices, while fostering a culture of trust and collaboration among nursing staff (Kyambade et al., 2024).

Authentic leadership has also been identified as an important organizational factor influencing nurses' innovative behavior. Innovative work behavior refers to nurses' ability to generate, promote, implement, and sustain new ideas, practices, and solutions that improve patient care and organizational

effectiveness. Such behavior extends beyond creativity by including the practical application of innovative ideas through collaboration, evidence-based practice, flexibility, and continuous problem solving. As healthcare systems become increasingly complex, innovative behavior enables nurses to respond effectively to changing patient needs, technological advancements, and organizational challenges (Moisoglou et al., 2024). Authentic leaders encourage innovation by creating psychologically safe environments where nurses feel comfortable expressing ideas, experimenting with new approaches, and participating in decision-making without fear of criticism or failure (Cao et al., 2024).

Developing innovative behavior is essential for improving healthcare quality, patient safety, and organizational performance. Nurses who actively participate in innovation contribute to improving clinical practice, increasing operational efficiency, and enhancing patient satisfaction. However, innovative behavior may be hindered by barriers such as limited resources, time constraints, resistance to change, and rigid organizational structures. Supportive leadership, continuous professional development, and organizational cultures that encourage creativity are therefore essential for promoting innovation among nursing staff (Lee & Seo, 2024; Huang & Zhang, 2024; Baber et al., 2024).

Work motivation is another essential determinant of nurses' performance, job satisfaction, and retention. It refers to the internal and external forces that stimulate nurses to achieve professional goals and perform their responsibilities effectively. Intrinsic motivation arises from personal fulfillment, professional values, and the desire to provide high-quality patient care, whereas extrinsic motivation is influenced by organizational factors such as recognition, career advancement, supportive supervision, and financial rewards. Highly motivated nurses demonstrate greater commitment, stronger teamwork, better decision-making, and higher quality of care, ultimately contributing to improved patient outcomes and organizational effectiveness (Meng & Yang, 2024). Leadership style plays a pivotal role in shaping nurses' work motivation by creating supportive work environments, recognizing achievements, providing constructive feedback, and encouraging professional development (Blechman et al., 2024).

Authentic leadership has been consistently associated with higher levels of work motivation because authentic leaders establish trusting relationships, promote fairness and transparency, and encourage nurses to participate in organizational decision-making. When nurses perceive their leaders as authentic, they experience greater psychological safety, organizational commitment, and professional empowerment, all of which strengthen their motivation to perform effectively and contribute to organizational improvement. Furthermore,

authentic leaders encourage innovative behaviors by recognizing and rewarding creative efforts, thereby creating a positive cycle in which innovation enhances motivation and motivated nurses become more willing to introduce improvements in clinical practice (Kohnen et al., 2024).

Leadership has become increasingly important in modern healthcare organizations because nursing managers directly influence nurses' professional attitudes, innovative performance, and work motivation. Previous studies have demonstrated positive associations between authentic leadership and several organizational outcomes, including innovation, job satisfaction, engagement, and motivation. However, most available evidence is based on cross-sectional research, while intervention studies evaluating the effectiveness of structured authentic leadership training programs remain limited, particularly within Saudi healthcare settings.

In addition, few studies have simultaneously examined the influence of authentic leadership training on both innovative work behavior and work motivation among nurses. Addressing this gap may provide evidence to support leadership development programs that improve nursing performance and organizational effectiveness. Therefore, this study was conducted to determine the effect of a head nurse's authentic leadership training program on nurses' innovative behavior and work motivation at Hafar Al-Batin Central Hospital, Saudi Arabia (Dartey-Baah et al., 2025; Gabay et al., 2025).

Aim of the Study

The study aimed to determine the effect of a head nurse's authentic leadership training program on nurses' innovative behavior and work motivation at Hafar Al-Batin Central Hospital in Saudi Arabia.

Research Hypothesis

The following hypothesis was tested:

H1: The implementation of the authentic leadership training program significantly improves head nurses' knowledge and practices of authentic leadership, as well as nurses' innovative work behavior and work motivation.

Methods

Research Design

A quasi-experimental pretest–posttest design was used to evaluate the effect of an authentic leadership training program on head nurses' authentic leadership

knowledge and practices, as well as nurses' innovative work behavior and work motivation.

Setting

The study was conducted in all clinical departments of Hafar Al-Batin Central Hospital, Saudi Arabia.

Participants

A convenience sampling technique was used to recruit all eligible participants. The study included 97 head nurses and 114 staff nurses who met the inclusion criteria and agreed to participate. Head nurses participated in the authentic leadership training program and completed the leadership knowledge and self-assessment questionnaires, whereas staff nurses completed the innovative work behavior and work motivation questionnaires.

Instruments

Four instruments were used for data collection.

Tool I: Authentic Leadership Knowledge Questionnaire

This questionnaire was developed by the researchers based on an extensive review of the relevant literature (Labrague et al., 2021; Alilyyani et al., 2022). It consisted of two parts. The first part collected the demographic characteristics of the participating head nurses, including age, educational qualification, years of experience, previous leadership training, and workplace. The second part assessed head nurses' knowledge regarding authentic leadership using multiple-choice and true/false questions. Correct answers were scored as one, whereas incorrect answers were scored as zero. Knowledge scores were classified as low (<60%), moderate (60–75%), or high (>75%).

Tool II: Authentic Leadership Questionnaire (ALQ)

Authentic leadership was measured using the Authentic Leadership Questionnaire (ALQ) developed by Walumbwa et al. (2008). The instrument consists of 16 items distributed across four dimensions: self-awareness (4 items), relational transparency (5 items), balanced processing (3 items), and internalized moral perspective (4 items). Responses were rated on a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Total scores were categorized as low (<60%), moderate (60–75%), or high (>75%).

Tool III: Innovative Work Behavior Questionnaire

Innovative work behavior was assessed using the questionnaire developed by Janssen (2000). The instrument consists of nine items distributed across three dimensions: idea generation, idea promotion, and idea realization (three items each). Responses were measured using a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Total scores were classified as low (<60%), moderate (60–75%), or high (>75%).

Tool IV: Work Motivation Questionnaire

Work motivation was measured using the questionnaire developed by Mottaz (1985). The instrument consists of 16 items divided equally into intrinsic motivation and extrinsic motivation. Responses were rated on a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Total scores were classified as low (<60%), moderate (60–75%), or high (>75%).

Validity and Reliability

The study instruments were translated into Arabic and evaluated for face and content validity by a panel of five experts in Nursing Administration. The experts assessed the instruments for clarity, relevance, comprehensiveness, applicability, and linguistic appropriateness. Their comments and recommendations were considered, and the necessary modifications were made before data collection.

The internal consistency of the study instruments was assessed using Cronbach's alpha coefficient. The reliability coefficients were 0.86 for the Authentic Leadership Knowledge Questionnaire, 0.88 for the ALQ, 0.89 for the Innovative Work Behavior Questionnaire, and 0.93 for the Work Motivation Questionnaire, indicating satisfactory reliability.

Pilot Study

A pilot study was conducted on approximately 10% of the study sample, including nine head nurses and eleven staff nurses, to evaluate the clarity, feasibility, and applicability of the study instruments. Participants included in the pilot study were retained in the final sample because no substantial modifications were required following pilot testing.

Ethical Considerations

Ethical approval was obtained from the Research Ethics Committee of the Faculty of Nursing, Mansoura University. Official permission to conduct the study was obtained from the administration of Hafar Al-Batin Central Hospital.

Participation was entirely voluntary, and all participants were informed about the purpose and procedures of the study before providing written informed consent. Participants were assured that their responses would remain confidential and anonymous and would be used solely for research purposes. They were also informed of their right to withdraw from the study at any stage without any consequences.

Data Collection Procedure

Data collection was conducted in three sequential phases: preparatory, implementation, and evaluation.

During the preparatory phase, which extended from October 2023 to March 2024, an extensive review of the relevant literature was undertaken to develop the authentic leadership training program. Based on current evidence and the identified educational needs, the program objectives, educational content, learning activities, instructional materials, and evaluation methods were prepared. Ethical approval and administrative permissions were obtained before commencing the study.

Before implementation, the researcher met with the hospital administration and participating head nurses to explain the study objectives, procedures, and implementation schedule. Eligible participants were approached individually, and written informed consent was obtained. Baseline (pretest) data were collected using the four study instruments. Completing the questionnaires required approximately 20–30 minutes. Data collection was conducted three days per week (Sunday, Tuesday, and Wednesday) during both morning and afternoon shifts to maximize participation.

The implementation phase was conducted from May to November 2024. The participating head nurses were divided into three groups according to their work schedules to facilitate attendance without disrupting patient care services. The authentic leadership training program consisted of five sessions, each lasting approximately two hours, with a total duration of 10 training hours. Educational strategies included interactive lectures, group discussions, brainstorming, role-playing, demonstrations, and audiovisual presentations. A training booklet prepared by the researchers was distributed to all participants at the beginning of the program to reinforce learning and facilitate future reference.

The evaluation phase was conducted immediately after completion of the training program and again three months later using the same study instruments administered during the baseline assessment. These assessments were

performed to evaluate changes in authentic leadership knowledge and practices among head nurses, as well as innovative work behavior and work motivation among staff nurses.

Statistical Analysis

Data were coded, entered, and analyzed using the Statistical Package for the Social Sciences (SPSS), version 25 (IBM Corp., Armonk, NY, USA). Descriptive statistics, including frequencies, percentages, means, standard deviations, and ranges, were used to summarize the data. Differences between categorical variables were examined using the Chi-square test. Non-parametric comparisons between two independent groups were performed using the Mann-Whitney U test, while the Kruskal-Wallis test was used for comparisons involving more than two independent groups. Changes across the three measurement phases (pretest, immediate posttest, and three-month follow-up) were analyzed using the Friedman test. Pearson's correlation coefficient was used to examine the relationships among the study variables. A p-value of less than 0.05 was considered statistically significant.

Results

Table 1: Personal characteristics of the studied head nurses at Hafar Albatin Hospital, Saudi Arabia (n=97).

Characteristics	No	%
Age in years		
▪ 20- < 35	29	29.9
▪ 35-<50	62	63.9
▪ >50	6	6.2
Mean $\pm$SD	36.59$\pm$6.45	
Gender		
▪ Male	17	18.5
▪ Female	80	82.5
Years of experience		
▪ 1-5	14	14.4
▪ >5-10	44	45.4
▪ >10	39	40.2
Mean $\pm$SD	11.46$\pm$1.96	
Educational level		
▪ Bachelor Degree	30	30.9
▪ Master Degree	54	55.7
▪ Doctorate Degree	8	8.2
▪ Other	5	5.2
Marital status		
▪ Single	24	24.7
▪ Married	73	75.3
Attending training program		
▪ Yes	67	69.1
▪ No.	30	30.9

Table 1 presents the personal characteristics of the head nurses studied at Hafar Albatin Hospital. In this table, it is observed that more than half of the studied nurses (63.9%) were aged between 35 and less than 50 years old, and most of them (82.5%) were female and (75.3%) were married. In terms of years of experience, about 45.4% had 5 or less than 10 years of experience. Regarding educational qualifications, about 69.1% held a master's degree, and most of them had attended a training program.

Table 2: Personal characteristics of the studied nurses at Hafar Albatin Hospital, Saudi Arabia (n=114).

Personal characteristics	The studied staff nurses	
	No.	%
■ Age years		
20-<35	29	25.4
35-<50	79	69.3
>50	6	5.3
Mean±SD	36.59±6.45	
■ Gender		
Male	30	26.3
Female	84	73.7
■ Educational level		
Bachelor	22	19.3
Technical Institute	92	80.7
■ Experience years		
<5	11	9.6
5-<10	25	21.9
10-<15	64	56.1
≥15	14	12.3
Mean±SD	14.84±2.74	

Table 2 illustrates the personal characteristics of the studied nurses at Hafar Albatin Hospital, Saudi Arabia. In this table, it is observed that more than half of the studied nurses (69.3%) were aged between 35 and less than 50 years old, with Mean± SD (36.59±6.45), and most of them (73.7%) were female. In terms of years of experience, slightly more than half (56.1%) had 10 to less than 15 years of experience. Concerning educational qualifications, about 80.7% had a Technical Institute degree.

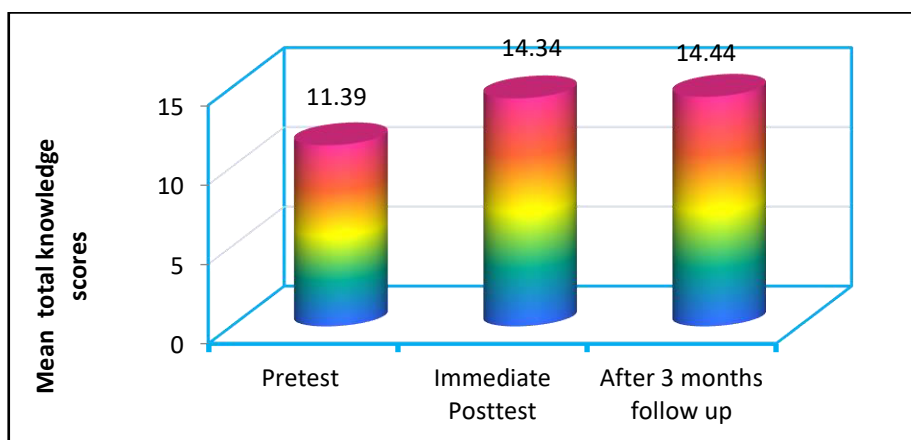


Figure 1: Mean scores of knowledge of the authentic leadership style of the studied head nurses through training program phases at Hafar Albatin Hospital, Saudi Arabia (n=97).

Figure 1 illustrates the knowledge scores for authentic leadership style among the head nurses studied across the training program phases at Hafar Albatin Hospital, Saudi Arabia. It showed that there was a statistically significant improvement in the level of knowledge through the different training phases. It showed that the total mean score of nurses' knowledge of authentic leadership style at the pretest phase was (11.39 ± 3.63) and improved at the immediate posttest and after the 3-month follow-up test phase to (14.34 ± 2.13) and (14.44 ± 2.02) , respectively.

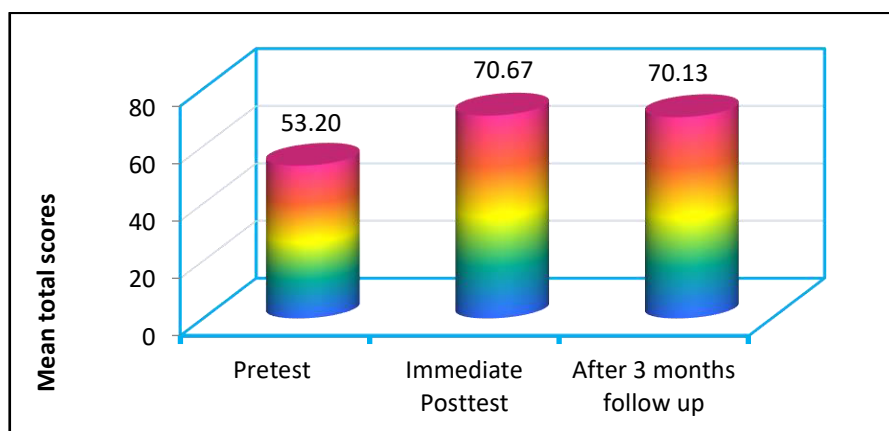


Figure 2: Mean score of authentic leadership as perceived by the head nurses studied across program phases (n=97).

Figure 2 shows the mean score of authentic leadership as perceived by the studied head nurses through program phases. This figure showed that there was a statistically significant improvement in authentic leadership style throughout the training program phases. It showed that

the highest total mean score was 70.76 at the immediate post-test phase, while it was 53.20 at the pretest phase.

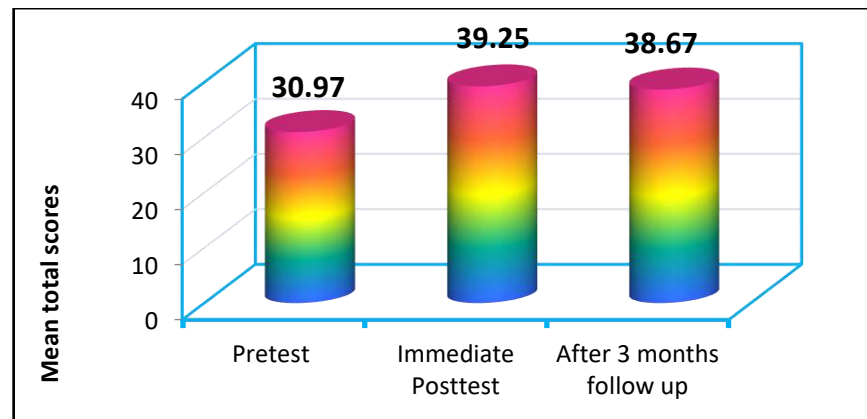


Figure 3: Mean scores of innovative work behavior as perceived by the nurses studied across program phases (n=114).

Figure 3 shows the mean score of innovative work behavior as perceived by the studied head nurses through program phases. This figure showed that there was a statistically significant improvement in innovative work behavior throughout the training program phases. It showed that the highest total score was 39.25 at the immediate post-test phase, compared with 30.97 at the pretest phase.

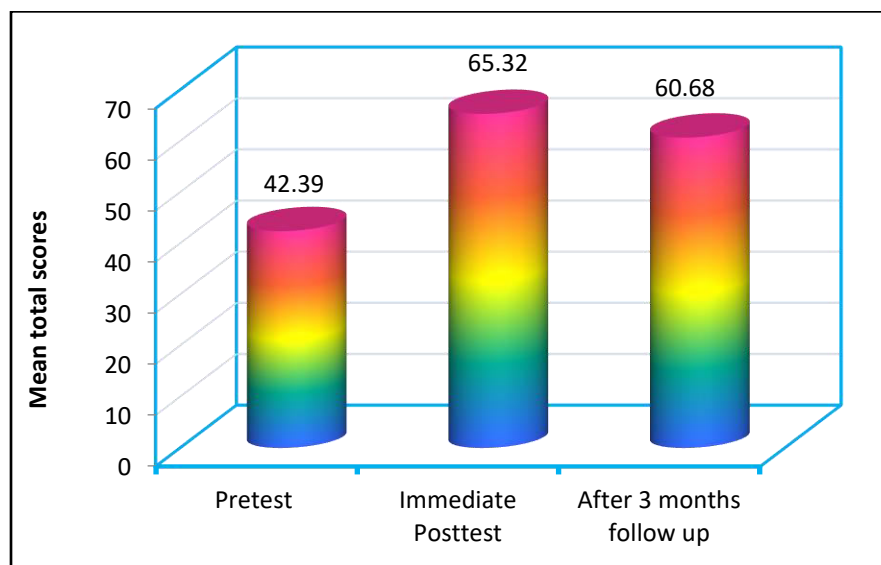


Figure 4: Mean scores of work motivation of the studied nurses through program phases (n=114).

Figure 4 shows the mean work motivation score as perceived by the head nurses studied across program phases. This figure showed that there was a statistically

significant improvement in work motivation throughout the training program phases. It showed that the highest total score was 65.32 at the immediate post-test phase, compared with 42.39 at the pretest phase.

Table 3: Relationship between total level of authentic leadership style knowledge and Authentic Leadership perception of the studied head nurses at Hafar Albatin Hospital through program phases.

Level of authentic leadership perception	Level of total Authentic Leadership Style knowledge of the studied head nurses (n=97)						x ² test P value
	Low level		Moderate level		High level		
	No.	%	No.	%	No.	%	
•Level of authentic leadership perception							
Pretest	(n=15)		(n=15)		(n=67)		
Low level	15	100	10	66.7	24	35.8	22.214 0.232
Moderate level	0	0	4	26.7	30	44.8	
High level	0	0	1	6.7	13	19.4	
Posttest	(n=2)		(n=3)		(n=92)		
Low level	2	100	0	0	9	9.8	18.441 0.001*
Moderate level	0	0	2	66.7	24	26.1	
High level	0	0	1	33.3	59	64.1	
Follow up	(n=6)		(n=1)		(n=90)		
Low level	0	0	0	0	12	13.3	29.046 0.0001*
Moderate level	6	100	1	100	13	14.4	
High level	0	0	0	0	65	72.2	

***Statistically significant (P<0.05)**

Table 3 shows the relationship between the total level of authentic leadership style knowledge and authentic leadership perception of the studied head nurses at Hafar Albatin Hospital, Saudi Arabia, through program phases. In this table, a statistically significant relationship is observed between the total level of knowledge of authentic leadership style and authentic leadership perception across program phases.

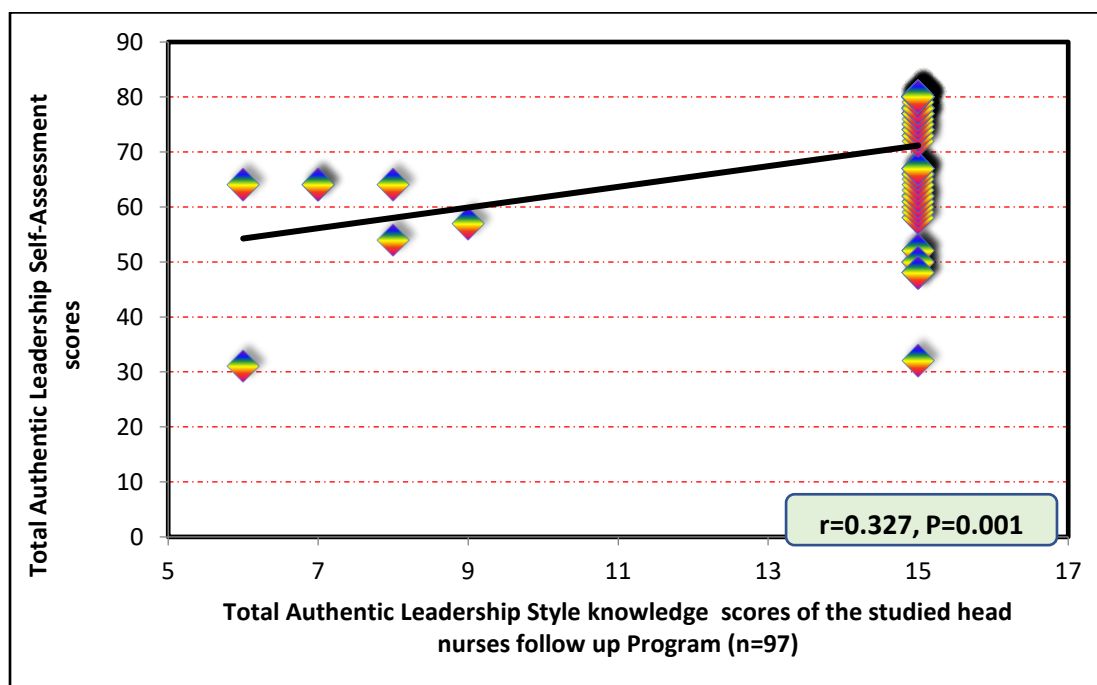


Figure 5: Correlation between total scores of authentic leadership style knowledge and authentic leadership Self-Assessment by the studied head nurses at Hafar Albatin Hospital, Saudi Arabia, follow-up training program.

Figure 5 displays the correlation between total scores of authentic leadership style knowledge and authentic leadership self-assessment by the studied head nurses at Hafar Albatin hospital, Saudi Arabia, pre-training program. The findings revealed a highly significant correlation between total scores of authentic leadership style knowledge and authentic leadership self-assessment by the studied head nurses at Hafar Albatin hospital, Saudi Arabia, follow-up training program ($r=0.702, p<0.001$).

Discussion

Authentic leadership is considered one of the most effective contemporary leadership approaches in healthcare organizations because it promotes ethical practice, transparency, trust, and positive interpersonal relationships. Authentic leaders create supportive work environments in which nurses feel respected, psychologically safe, and empowered to participate in decision-making. Such leadership practices encourage innovation, strengthen professional commitment, and enhance employees' motivation by fostering confidence and open communication. Consequently, leadership development programs have become an essential strategy for improving nursing leadership competencies and organizational outcomes. Therefore, the present study aimed to determine the effect of a head nurse's authentic leadership training program on nurses'

innovative work behavior and work motivation at Hafar Albatin Hospital, Saudi Arabia.

Authentic leadership knowledge through the training program phases

The present study demonstrated a statistically significant improvement in head nurses' knowledge regarding authentic leadership throughout all phases of the training program. Before the program's implementation, participants demonstrated relatively low levels of knowledge. However, immediately after completing the program, knowledge scores increased significantly and remained high three months later, indicating that the acquired knowledge was retained over time.

The observed improvement in knowledge of authentic leadership may be attributed to the structured design of the educational program, which introduced participants to the principles of authentic leadership through evidence-based content and interactive learning strategies. The combination of lectures, brainstorming sessions, group discussions, role-playing activities, and continuous feedback provided participants with opportunities to understand authentic leadership concepts and relate them to real clinical situations. These educational approaches encouraged active participation and facilitated long-term knowledge retention.

The sustained improvement observed during the follow-up phase suggests that participants were able to apply the acquired knowledge within their daily leadership practice, reinforcing learning through continuous application. Repeated exposure to authentic leadership behaviors during routine managerial activities may have strengthened knowledge retention and increased participants' confidence in utilizing authentic leadership principles when interacting with nursing staff.

The current findings are supported by Saleh et al. (2021), who reported significant improvements in head nurses' knowledge following implementation of an authentic leadership educational program, with knowledge remaining significantly higher during follow-up evaluation. Similarly, Aboelenein and Mostafa (2023) found that educational interventions focusing on authentic leadership significantly enhanced nurse managers' knowledge and that these improvements were maintained over time. Likewise, Nagib et al. (2024) concluded that structured authentic leadership education produced sustained improvements in leadership knowledge among head nurses. Furthermore, Mondini et al. (2020) emphasized that continuous leadership education

contributes substantially to improving nurses' understanding of authentic leadership concepts and supports their professional development.

Authentic leadership self-assessment throughout the training program

The findings of the present study also demonstrated a statistically significant improvement in authentic leadership self-assessment among head nurses across the different phases of the training program. Participants reported higher authentic leadership scores immediately after the intervention, and these improvements remained evident at the three-month follow-up assessment.

This improvement may be explained by the educational program's emphasis on encouraging self-reflection and helping participants recognize authentic leadership behaviors within their own clinical practice. Through practical activities and interactive discussions, head nurses became more aware of leadership behaviors that promote trust, ethical practice, openness, and supportive communication with staff nurses. As participants increasingly incorporated these behaviors into their managerial roles, their perception of authentic leadership improved accordingly.

The persistence of higher authentic leadership scores during follow-up indicates that behavioral changes extended beyond the immediate educational experience. Continued application of authentic leadership principles in the workplace may have reinforced these practices and enabled participants to integrate them into their daily management activities.

These findings are consistent with those reported by Saleh et al. (2021), who found significant improvements in authentic leadership behaviors among head nurses following implementation of an authentic leadership training program. Likewise, Aboelenein and Mostafa (2023) demonstrated that authentic leadership educational interventions significantly improved leadership practices among nurse managers, with positive effects maintained during follow-up. Similar findings were reported by Abdelhamied Soliman et al. (2023), who concluded that authentic leadership training resulted in sustained improvements in leadership behaviors among head nurses. Furthermore, Dirik and Seren Intepeler (2024) confirmed that authentic leadership training significantly enhanced leadership competencies among nursing managers and contributed to improved organizational outcomes.

Innovative work behavior throughout the training program

The present study revealed a statistically significant improvement in nurses' innovative work behavior following the implementation of the authentic

leadership training program. The mean innovative work behavior score increased markedly immediately after the intervention and remained higher than the baseline score at the three-month follow-up assessment. These findings indicate that the training program had a positive and sustained influence on nurses' willingness to generate, promote, and implement new ideas within their clinical practice.

The observed improvement may be attributed to the positive leadership environment established by head nurses following completion of the authentic leadership program. Authentic leaders encourage open communication, mutual trust, ethical decision-making, and psychological safety, creating an atmosphere in which staff nurses feel comfortable expressing new ideas and participating in organizational improvement. Such supportive leadership practices reduce fear of criticism and increase nurses' confidence in proposing innovative solutions to clinical challenges.

The improvement maintained during the follow-up period suggests that authentic leadership behaviors became integrated into routine managerial practice, allowing nurses to continue working within an environment that encouraged creativity and innovation. Continuous managerial support, constructive feedback, and greater staff involvement in decision-making may have reinforced innovative behaviors beyond the completion of the educational intervention.

The present findings are consistent with Saleh et al. (2021), who demonstrated that authentic leadership training significantly improved nurses' creativity and innovative work behavior following implementation of a structured educational program. Similarly, Aboelenein and Mostafa (2023) reported significant improvements in innovative behavior among staff nurses following head nurses' training in authentic leadership. Likewise, Abdelhamied Soliman et al. (2023) found that authentic leadership training positively influenced nurses' innovative work behavior and that these improvements persisted at follow-up. Furthermore, Bai et al. (2022) emphasized that authentic leadership creates organizational environments that stimulate innovation and encourage employees to participate actively in organizational development.

Work motivation throughout the training program

The findings of the present study demonstrated a statistically significant improvement in nurses' work motivation following the implementation of the authentic leadership training program. Work motivation scores increased

considerably immediately after the intervention and remained elevated at the three-month follow-up, indicating that the positive effects of the program extended beyond the immediate post-training period.

The improvement in work motivation may be explained by the positive changes in leadership practices following the educational program. Authentic leaders establish trusting relationships with staff members, communicate openly, provide constructive support, and involve employees in decision-making. Such leadership behaviors promote employees' sense of appreciation, professional value, and organizational commitment, all of which contribute to greater work motivation. When nurses perceive their leaders as supportive and trustworthy, they become more engaged in their work and more committed to achieving organizational goals.

The sustained improvement during follow-up further suggests that authentic leadership behaviors continued to influence the work environment after completion of the training program. Ongoing supportive interactions between head nurses and staff nurses may have reinforced motivation through continuous encouragement, recognition of staff contributions, and promotion of a collaborative workplace culture.

The current findings agree with those of Nagib et al. (2024), who reported that authentic leadership educational programs significantly enhanced nurses' work motivation. Similarly, Saleh et al. (2021) found that nurses' motivation improved significantly after the implementation of authentic leadership training for head nurses. Comparable findings were reported by Mohammadi et al. (2025), who concluded that structured educational interventions positively influence nurses' job motivation. Furthermore, Yu et al. (2025) demonstrated that interactive educational programs significantly enhanced motivation among nursing personnel, supporting the positive motivational outcomes observed in the present study.

Relationship between authentic leadership knowledge and authentic leadership self-assessment

The present study demonstrated a statistically significant relationship between authentic leadership knowledge and authentic leadership self-assessment throughout the training program phases. Furthermore, a strong positive correlation was identified between total authentic leadership knowledge scores and authentic leadership self-assessment scores at the three-month follow-up assessment. These findings indicate that increased knowledge regarding

authentic leadership was accompanied by improved perception and application of authentic leadership behaviors among head nurses.

This relationship suggests that the educational program successfully translated theoretical knowledge into practical leadership behaviors. As participants developed a deeper understanding of authentic leadership concepts, they became more capable of applying these principles within their managerial responsibilities. Increased knowledge likely enhanced self-awareness regarding leadership practices and strengthened participants' confidence in adopting authentic leadership behaviors during daily interactions with nursing staff.

The strong correlation observed during follow-up also indicates that knowledge acquired during the program continued to influence leadership practice after completion of the intervention. The continuous application of authentic leadership principles in the clinical setting may have reinforced both cognitive understanding and behavioral implementation, resulting in sustained improvements in perceptions of leadership.

These findings are supported by Aboelenein and Mostafa (2023), who reported that educational interventions significantly strengthened both knowledge of authentic leadership and leadership practices among head nurses. Similarly, Sahraei Beiranvand et al. (2021) found positive relationships between authentic leadership knowledge and leadership behaviors following leadership development programs. Almeida and Miclos (2022) likewise reported that improvements in authentic leadership education were associated with better leadership practices among nursing professionals. In addition, Abd-Erhaman et al. (2022) demonstrated that authentic leadership education positively influenced leadership behaviors and organizational outcomes among nursing staff, supporting the strong relationship observed in the present study.

Conclusion

The findings of the present study demonstrated that the authentic leadership training program was effective in improving head nurses' knowledge of authentic leadership and their authentic leadership practices. Significant improvements were observed immediately after the intervention and were maintained at the three-month follow-up, indicating the sustainability of the training outcomes. The program also produced significant positive effects on staff nurses' innovative work behavior and work motivation, with both variables showing marked improvement following program implementation. In addition, a statistically significant positive relationship was found between head nurses' knowledge of

authentic leadership and their perception of authentic leadership across the different program phases. Furthermore, a strong positive correlation was identified between authentic leadership knowledge and authentic leadership self-assessment at follow-up, suggesting that increased knowledge was associated with better leadership practice. Overall, the findings support the effectiveness of authentic leadership training as a practical strategy for strengthening nursing leadership and enhancing positive staff outcomes within healthcare organizations.

Recommendations

For Hospital Administration

- Integrate authentic leadership training into continuing nursing leadership development and in-service education programs.
- Provide periodic refresher training and follow-up sessions to sustain authentic leadership practices and their positive organizational outcomes.
- Foster a supportive organizational culture that encourages ethical leadership, open communication, innovation, and employee motivation.

For Head Nurses

- Apply authentic leadership principles consistently in daily leadership practices by promoting transparency, ethical decision-making, and self-awareness.
- Encourage open communication and provide regular constructive feedback to support staff nurses' innovative ideas and professional development.
- Create a psychologically safe work environment that motivates nurses to participate in decision-making and continuous improvement activities.

For Staff Nurses

- Participate actively in leadership development and professional training programs.
- Engage in innovative work practices by proposing evidence-based ideas and participating in quality improvement initiatives.
- Maintain effective communication with nurse leaders and colleagues to enhance teamwork and work motivation.

For Future Research

- Conduct longitudinal studies with follow-up periods longer than three months to evaluate the long-term sustainability of authentic leadership training outcomes.

- Investigate the effect of authentic leadership training on additional organizational outcomes, such as job satisfaction, organizational commitment, staff retention, and patient care quality.
- Replicate the study in different healthcare settings and larger samples to improve the generalizability of the findings.

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Conflict of interest

The authors declare no conflict of interest in the preparation of this study.

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