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How does authentic leadership influence the safety climate in nursing?

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ABSTRACT

Background Authentic leadership controls quality care and the safety of patients and healthcare professionals, especially nurses.

Aim This study examined the influence of nurses' authentic leadership on the safety climate.

Methods In this predictive research, 314 Jordanian nurses from various hospitals were convenience sampled for cross-sectional and correlational design. This research included all hospital nurses with 1 year of experience, at least at the present hospital. SPSS (V.25) conducted descriptive statistics and multivariate analyses. As needed, sample variables' means, SD and frequencies were supplied.

Results The mean scores on the entire Authentic Leadership Questionnaire and its subscales were moderate. The mean score of the SCS was below 4 (out of 5), indicating negative safety climate perceptions. A significant positive moderate association was found between nurses' authentic leadership and safety climate. Nurses' authentic leadership predicted a safe climate. Internalised moral and balanced processing subscales were significant predictors of safety climate. Being woman and having a diploma inversely predicted the nurses' authentic leadership; however, the model was insignificant.

Conclusion Interventions are needed to enhance the perception of the safety climate in hospitals. Nurses' authentic leadership increases their perceptions of a positive safety climate, and thus different strategies to build on nurses' authentic leadership characteristics are warranted.

Implications for nursing management The negative perceptions of the safety climate mandate that organisations create strategies to increase nurses' awareness about the safety climate. Shared leadership, learning environments and information sharing would improve nurses' perceptions of the safety climate. Future studies should examine other variables influencing safety climate with a more extensive and randomised sample. Safety climate and authentic leadership should be integrated into the nursing curricula and continuing education courses.

WHAT IS ALREADY KNOWN ON THIS TOPIC

⇒ Authentic leadership encourages teamwork, which enhances working conditions. Real leadership is required for healthy workplaces. Genuine leadership increases satisfaction, interest, commitment and retention at work. Staff retention and job satisfaction are predicted by leadership. Authentic leadership benefits patients. leadership openness. Credible genuine leaders support safe behaviour while balancing the needs of the team and the patients. Safety is created when nurses are valued. There is little research on how authentic leadership affects the safety climate in nursing.

WHAT THIS STUDY ADDS

⇒ The results of this study will build the nursing body of knowledge, monitor the safety climate and determine the precautions and authentic leadership interventions that can be taken to promote a safe climate.

HOW THIS STUDY MIGHT AFFECT RESEARCH, PRACTICE OR POLICY

⇒ Nurse management must boost workforce understanding to improve safety perceptions. Shared decision-making and supportive leadership boost safety. Learning business culture achieves goals. Creating a learning environment culture takes time and dialogue between employees and management. This improves perceptions of true leadership and safety. Improving the safety climate may involve positive work process improvements and positive attitudes and behaviours from actual leaders towards evidence-based change. Non-conventional leaders are needed to promote 'voluntary safety-related behaviour'.

INTRODUCTION

Authentic leadership promotes good work environments through relationship-building.[1 2] Authentic leadership is key to healthy workplaces.[1–5] Authentic leadership improves job satisfaction,[2 6 7] job interest,[7] work commitment[2 5] and intent to stay in the organisation.[2–5 8 9] Authentic leadership was the biggest predictor of job satisfaction and retention.[1–6 10]

Authentic leadership improves patient care and nurse safety.[2 4 5 8 9 11–15] Genuine leaders are transparent.[5 13] Staff is trusted.[4 10 16] Authentic leaders balance team personal safety with quality patient care[14] and encourage safety-related behaviours in their employees.[17] They also promote a safe environment by appreciating nurses.[14]

Knowledge sharing and safety climate mediators boost leadership and safety.[11] A safety climate is required for safe behaviour. Unfortunately, healthcare lacked a 'safety climate'.[14] The safety climate is

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Table 1 Means, SD, ranges and Cronbach's alpha (N=314)

Scales/subscales	Mean	Standard Deviation	Min	Max	Cronbach's Alpha
Authentic leadership (16 Items)	3.53	0.74	3.17	3.87	0.89
Self-awareness (items 1, 5, 9, 13)	3.37	1.10	3.58	3.88	0.67
Internalised moral (items 2, 6, 10, 14)	3.52	0.79	3.34	3.72	0.76
Balanced processing (items 3, 7, 11, 15)	3.57	0.76	3.40	3.72	0.68
Relational transparency (items 4, 8, 12, 16)	3.37	1.10	3.19	3.58	0.60
Safety climate (19 items)	3.68	0.83	3.25	3.91	0.92

an organisation's safety, rules, procedures and practices.[15] It indicates healthcare workers' views towards patient safety.[13] Safety climate is an important strategy for improving healthcare safety and quality.[2 13 14 18–20] It promotes a blame-free environment and a non-punitive attitude towards errors.[19 21 22] Healthcare safety and quality improvement would not happen overnight; examine the current safety climate.[2 14 21] This assessment allows for a better understanding of attitudes and behaviours that contribute to a hazardous climate or escalate patient safety difficulties.[1 8 9 17–19 22 23] Safety climate metrics enable hospitals identify high-risk scenarios.[18 19] These measurements also help identify safety climate strengths and weaknesses.[18–21 24–27]

For the current study, nurses' authentic leadership was the independent variable, while 'nurses' perception of the safety climate' was the dependent variable. Therefore, this study aimed to (1) assess Jordanian nurses' authentic leadership and their perceptions of safety climate, (2) assess associations among nurses' authentic leadership, the perceptions of safety climate and sample's characteristics, (3) determine if nurses' authentic leadership predicts the perceptions of safety climate and (4) assess predictors of nurses' authentic leadership. The results of this study will build the nursing body of knowledge, monitor the safety climate and determine the precautions and authentic leadership interventions that can be taken to promote a safe climate.

Table 2 Samples' characteristics (N=314)

Characteristics	Total sample
Age, years	24.5±0.88
Experience in position, years	3.22±0.66
Experience in a specialty, years	3.20±0.61
Experience in organisation, years	3.14±0.51
Job position	
Registered nurses	272 (86.9%)
Head nurses	17 (5.4%)
Supervisors	13 (4.2%)
Others	11 (3.5%)
Gender	
Male	82 (27.3%)
Female	218 (72.7%)
Marital status	
Single	226 (75.1%)
Married/widow/divorced	75 (24.9%)
Level of education	
Diploma	11 (3.7%)
Bachelor's degree	261 (87.3%)
Master	24 (8.0%)
Doctorate	3 (1.0%)
Type of hospital	
Governmental	109 (34.7%)
Private	27 (8.6%)
Military	178 (56.7%)
Area of work	
Units	134 (62.0%)
Wards	82 (38.0%)
Some totals do not=314 because of missing data.	

METHODS

Design and sample and settings

The cross-sectional and correlational design was utilised in this prediction research, with a convenience sample of 314 Jordanian nurses recruited from different types of hospitals in Jordan (two governmental, one private), and a response rate of 75.0%. All nurses working in hospital settings who had at least 1 year of experience at their present hospital were eligible to participate in this research.

Ethical considerations

The first author's university's IRB accepted the study (2021/2020/1/2). Participation was voluntary, nurses were guaranteed. Answering and returning the questionnaire was deemed consent. This was stated in the invitation letter. Hospitals and nursing administrations kept the results confidential. All questionnaires were coded to ensure confidentiality.

Data collection

Data were gathered in 2020 over a month. Data were collected by a survey administered in English, the official language of nursing education in Jordan. A pilot study preceded data collection to check for the suitability of the survey to the healthcare context in Jordan, and no changes were required. Nurses were approached by their nurse managers and then reminded to answer the survey 2 weeks after starting the data collection. Participants were requested to engage in the study of their own will. In the questionnaire invitation mail, it was stated that 'answering and returning your questionnaire is considered your consent form'. The anonymity of the responses was secured by coding the surveys, and the confidentiality of nurses was protected by sharing the complete results only with hospitals and nursing administrations.

Measures

The Authentic Leadership Questionnaire

The study used the Authentic Leadership Questionnaire (ALQ)-Rater Form.[25] Mind Garden Institute (Copyright 2007 Authentic Leadership Questionnaire by Walumbwa *et al*[25] granted permission to use the ALQ in October 2020.[26] The ALQ is a five-point Likert scale with 1=strongly disagree, 2=disagree, 3=neutral, 4=agree and 5=strongly agree. The 16-item quiz measures

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Table 3 Means, SD and frequencies of the authentic leadership self-assessment item scores (N=314)

Item	Mean (SD)	Rating 1 n (%)	Rating 2 n (%)	Rating 3 n (%)	Rating 4 n (%)	Rating 5 n (%)
5. I can list my three greatest strengths.	3.88 (2.49)	14 (4.5)	15 (4.8)	72 (23.2)	139 (44.8)	70 (22.6)
15. I listen very carefully to the ideas of others before making decisions.	3.73(0.93)	9 (2.9)	13 (4.2)	96 (30.8)	128 (41.0)	66 (21.2)
14. My morals guide what I do as a leader.	3.72 (1.03)	10 (3.2)	28 (9.1)	74 (23.9)	121 (39.2)	76 (24.6)
13. I accept the feelings I have about myself.	3.66 (1.01)	14 (4.5)	24 (7.8)	73 (23.6)	139 (45.0)	59 (19.1)
1. I can list my three greatest weaknesses.	3.59 (1.02)	16 (5.1)	20 (6.4)	96 (30.7)	123 (39.3)	58 (18.5)
2. My actions reflect my core values.	3.59 (1.06)	16 (5.1)	27 (8.6)	89 (28.4)	117 (37.4)	64 (20.4)
8. I let others know who I truly am as a person.	3.59 (1.00)	8 (2.6)	35 (11.2)	94 (30.0)	116 (37.1)	60 (19.2)
7. I listen closely to the ideas of those who disagree with me.	3.58(0.98)	11 (3.5)	31 (9.9)	84 (26.8)	139 (44.4)	48 (15.3)
9. I seek feedback as a way of understanding who I really am as a person.	3.57 (1.02)	11 (3.5)	30 (9.6)	99 (31.8)	110 (35.4)	61 (19.6)
3. I seek others' opinions before making up my own mind.	3.55 (1.45)	14 (4.6)	24 (7.8)	112 (36.5)	109 (35.5)	48 (15.6)
6. I do not allow group pressure to control me.	3.42 (1.06)	17 (5.4)	39 (12.5)	97 (31.1)	111 (35.6)	48 (15.4)
11. I do not emphasise my own point of view at the expense of others.	3.41(0.96)	10 (3.2)	38 (12.1)	117 (37.4)	109 (34.8)	39 (12.5)
16. I admit my mistakes to others.	3.39 (3.11)	22 (7.0)	49 (15.7)	113 (36.1)	90 (28.8)	39 (12.4)
10. Other people know where I stand on controversial issues.	3.34(0.99)	11 (3.5)	44 (14.1)	124 (39.6)	93 (29.7)	41 (13.1)
12. I rarely present a 'false' front to others.	3.33 (1.02)	15 (4.8)	42 (13.4)	121 (38.7)	94 (30.0)	41 (13.1)
4. I openly share my feelings with others.	3.18 (1.15)	27 (8.7)	57 (18.3)	102 (32.8)	80 (25.7)	45 (14.5)
A total score of an authentic leadership scale	56.35±0.11.90					
Mean score of an authentic leadership subscale	3.53±0.74					
A total score of the self-awareness subscale	14.61±4.00					
Mean score of the self-awareness subscale	3.68±0.98					
A total score of the internalised moral subscale	14.04±3.18					
Mean score of the internalised moral subscale	3.52±0.79					
A total score of the balanced processing subscale	14.20±3.08					
Mean score of the balanced processing subscale	3.57±0.76					
A total score of the relational transparency subscale	13.49±4.41					
Mean score of the relational transparency subscale	3.37±1.10					
Rating of 1=strongly disagree, 2=disagree, 3=neutral, 4=agree and 5=strongly agree; some totals do not equal to 314 because of missing data.						

self-awareness, an internalised moral, balanced processing and relational transparency. Total subscale and full-scale scores are calculated by adding mean scores and dividing by the number of items. High scores reflect true leadership. A score of 4 or higher out of 5 indicates high authentic leadership, and a score of 3 or less indicates low authentic leadership.

For the ALQ scale total (16 items), reliability coefficients were 0.95[13] and ranged for the subscales between 0.78 and 0.92[13] and 0.70 and 0.92.[25] In the current study, the reliability coefficients for the ALQ scale total scores (16 items), the self-awareness subscale, the internalised moral subscale, the balanced processing subscale and the relational transparency subscale were all 0.89 (table 1).

The Safety Climate Survey

This study used the valid, short, easy-to-administer Safety Climate Survey (SCS). The SCS is unidimensional, allowing it to be translated. Professor Sexton granted authorisation to use the SCS in October 2020. Nineteen survey items were graded on a five-point Likert scale: 1=strongly disagree, 2=slightly disagree, 3=neutral, 4=slightly agree, 5=strongly agree and 6=not applicable. '6=not applicable' items were omitted from the final analysis, and item 18 was reverse scored (personnel frequently disregard rules or guidelines established for this clinical area). 4 or 5 shows a positive safety perception.[23] The scale is also psychometric.[22] The SCS dependability coefficient is 0.92[13] (table 1).

Data analyses

The descriptive statistics and multivariate analysis were performed using the SPSS V.25[27] at a significance level of 0.05. In addition, as appropriate, means, SD and frequencies were reported for the sample's variables.

ALQ and SCS mean scores were provided in descending order, with 5-point Likert scale frequencies. Pearson correlation coefficients were used to compare nurses' authentic leadership, the safety climate and sample characteristics. Standard multiple linear regressions were used to determine if nurses' authentic leadership predicts the safety climate while controlling for nurses' and setting-related variables (age, experience in the position and specialty and organisation, job position, gender, marital status, education, type of hospitals and type of work area). Categorical variables were dummy coded.

RESULTS

Sample's characteristics

A total sample size sums up to 314 of the nurses; 72.7% (n=218) were women and 27.3% (n=82) were men. Nurses' average age was 24.6 (SD=0.88) years, average years of experience in the position, specialty area of work and organisation were 3.22 (SD=0.66), 3.20 (SD=0.61) and 3.14 (SD=0.51), respectively. The majority of the sample were Registered Nurses (RNs) (272, 86.9%), single (226, 75.1%), had bachelor's degree (261, 87.3%) and working in units (134, 62.0%) in military hospitals (178, 56.7%) and governmental hospitals (109, 34.7%) (table 2).

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Table 4 Means, SD and frequencies of the safety climate item scores (N=314)

Item	Mean (SD)	Rating 1 n (%)	Rating 2 n (%)	Rating 3 n (%)	Rating 4 n (%)	Rating 5 n (%)	PPR (%)
10. I receive appropriate feedback about my performance.	3.75 (1.08)	12 (4.1)	23 (7.8)	77 (26.1)	95 (32.2)	88 (29.8)	11.9
5. Leadership is driving us to be a safety-centred institution.	3.74 (1.05)	10 (3.3)	23 (7.7)	86 (28.7)	96 (32.0)	85 (28.3)	11.0
19. Patient safety is constantly reinforced as the priority in this clinical area.	3.73 (1.06)	12 (4.2)	17 (6.0)	85 (30.0)	89 (31.4)	880 (28.3)	10.2
12. Briefing personnel before the start of a shift (ie, to plan for possible contingencies) is an important part of safety.	3.70 (1.03)	12 (4.2)	24 (8.4)	83 (28.9)	83 (28.9)	85 (29.6)	12.6
8. I am encouraged by my colleagues to report any safety concerns I may have.	3.67(0.98)	9 (3.1)	16 (5.5)	100 (34.2)	102 (34.9)	65 (22.3)	8.6
9. I know the proper channels to direct questions regarding patient safety.	3.62 (1.03)	12 (4.1)	20 (6.8)	101 (34.2)	96 (32.5)	66 (22.4)	10.9
17. The personnel in this clinical area take responsibility for patient safety.	3.61 (1.07)	11 (3.7)	31 (10.5)	89 (30.3)	93 (31.6)	70 (23.8)	14.2
16. I believe that most adverse events occur as a result of multiple system failures, and are not attributable to one individual's actions.	3.59 (1.07)	11 (3.6)	30 (9.9)	103 (33.1)	84 (27.8)	74 (24.5)	13.5
15. This institution is doing more for patient safety now than it did 1 year ago.	3.59 (1.07)	16 (5.5)	23 (7.8)	86 (29.4)	107 (36.5)	61 (20.8)	13.3
14. I am satisfied with the availability of clinical leadership.	3.57 (1.09)	15 (5.1)	25 (8.5)	99 (33.6)	87 (29.5)	69 (23.4)	13.6
1. The culture of this clinical area makes it easy to learn from the mistakes of others.	3.57 (1.12)	17 (5.6)	29 (9.5)	95 (31.3)	89 (29.3)	74 (24.3)	15.1
6. My safety suggestions would be acted on if I expressed them to management.	3.56 (1.05)	12 (4.0)	20 (6.7)	106 (35.3)	110 (36.7)	52 (17.3)	10.7
3. The senior leaders in my hospital listen to me and care about my concerns.	3.56 (1.12)	15 (5.0)	32 (10.7)	94 (31.5)	84 (28.2)	73 (24.5)	15.7
4. The physician and nurse leaders in my area listen to me and care about my concerns.	3.54 (1.04)	13 (4.4)	32 (10.8)	84 (28.5)	113 (38.3)	53 (18.0)	15.2
11. I would feel safe being treated here as a patient.	3.53 (1.15)	22 (7.7)	21 (7.4)	91 (31.9)	85 (29.8)	66 (23.2)	15.1
2. Medical errors are handled appropriately in this clinical area.	3.43 (1.09)	15 (4.9)	43 (14.1)	98 (32.1)	92 (30.2)	57 (18.7)	19.0
13. Briefings are common here.	3.37 (1.03)	15 (5.1)	28 (9.5)	134 (45.4)	68 (23.1)	50 (16.9)	14.6
18. Personnel frequently disregard rules or guidelines that are established for this clinical area (reverse scored).	3.36 (1.10)	55 (18.2)	77 (25.4)	113 (37.3)	39 (12.9)	19 (6.3)	43.6
7. Management/leadership does not knowingly compromise safety concerns for productivity	3.18 (1.12)	24 (8.0)	54 (17.9)	107 (35.5)	75 (24.9)	41 (13.9)	25.9
A total score of safety climate scale	69.80±0.15.96						
Mean score of safety climate scale	3.68±0.83						

Rating of 1=disagree strongly, 2=disagree slightly, 3=neutral, 4=agree slightly, and 5=agree strongly; some totals do not equal to 314 because of missing data.
PPR, percentage of problematic response.

Nurses' authentic leadership and safety climate

A high Likert score implies true leadership. ALQ score of 3.53 (SD=0.74) indicates modest authentic leadership. Mean subscale scores ranged from 3.37 (SD=1.10) to 3.57 (SD=0.76), indicating moderate authentic leadership.

Table 3 lists ALQ scores in descending order. The highest three means were that nurses could list their three greatest strengths (x=3.88, SD=2.49), listen closely to others' perspectives before making judgements (x=3.73, SD=0.93), and their morals guide what they do (x=3.72, SD=1.03). The lowest three ALQ scores were that nurses openly discuss their feelings (x=3.18, SD=1.15), rarely present a 'false' face to others (x=3.33, SD=1.02), and others know where nurses stand on controversial subjects (x=3.34, SD=0.99) (table 3).

Table 5 Significant correlations of nurses' authentic leadership and safety climate and samples' characteristics (N=314)

	Authentic leadership scale	Safety climate
Authentic Leadership Scale	1.00	0.539*
Self-awareness	0.788*	0.419*
Internalised moral	0.866*	0.486*
Balanced processing	0.820*	0.479*
Relational transparency	0.755*	0.389*
Safety climate	0.539*	1.00
Gender	0.220*	0.156*
Age	–	−0.178*
Type of hospital	0.148*	0.189*

*At significance level 0.01.

A score of 4 or higher out of 5 indicates a positive perception of safety climate.[23] The mean score of the SCS was 3.68 (SD=0.83), indicating a negative perception of the safety climate. The precise frequencies of each mean score were reported in table 4, with means ranging between 3.18 and 3.75, indicating a negative perception of the safety climate. The majority of responses were 'agree' or 'strongly agree'.

The SCS mean scores were ordered. The highest three means were that nurses receive adequate performance feedback (x=3.75, SD=1.08), leadership drives the hospital to be a safety-centred institution (x=3.74, SD=1.05), and patient safety is consistently reinforced in the clinical area (x=3.73, SD=1.06). The lowest three SCS means were that management/leadership did not knowingly compromise safety for productivity (x=3.18, SD=1.12), personnel frequently disregarded rules or guidelines for this clinical area (reverse scored) (x=3.36, SD=1.12), and briefings were standard in the hospital (x=3.37, SD=1.12) (table 4).

Associations among nurses' authentic leadership and safety climate

At a significance level of 0.01, the Pearson correlation coefficient yielded positive moderate to high associations between safety climate and nurses' authentic leadership (r=0.539), nurses' authentic leadership subscale of self-awareness (r=0.788), authentic leadership subscale of internalised moral (r=0.866), authentic leadership subscale of balanced processing (r=0.820) and authentic leadership subscale of relational transparency (r=0.820). At 0.01, there were significant relationships between

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Table 6 Significant predictors of nurses' authentic leadership and safety climate (N=314)

Dependent and significant predictors	B*	β*	t-test	P	R^2	Adjusted R^2	F-test (df) †(P-value)
Safety Climate Scale					0.454	0.384	6.457 (df=24) (p<0.001)
Total authentic leadership scale	0.836	0.589	10.004	<0.001			
Education, diploma	−12.103	−0.123	−1.890	0.049			
Safety Climate Scale					0.460	0.381	5.782 (df=27) (p<0.001)
Subscale of authentic leadership: Internalised moral subscale	1.254	0.255	2.483	0.014			
Subscale of authentic leadership: balanced processing subscale	0.899	0.185	2.268	0.025			
Education, diploma	−12.742	−0.129	−2.069	0.040			
Authentic Leadership Scale					0.153	0.049	1.46 (df=23) (p=0.086)
Gender, female	3.328	0.141	1.971	0.050			
Education, diploma	−16.632	−0.240	−3.195	0.002			

*B and β=unstandardised and standardised coefficients, respectively.
†P<.001 (two-tailed).

gender and authentic leadership (r=0.220), hospital type and authentic leadership (r=0.148), gender and safety climate (r=0.156), age and safety climate (r=−0.178) and hospital type and safety climate (r=0.189) (table 5).

Predictors of the safety climate

The standard regression analysis results indicated that the total scale of nurses' authentic leadership (β=0.589) and education level of diploma (β=−0.123) predicted the safety climate. The model explained 38.4% of the variance in the safety climate score (F (df=24)=6.457, p=0.001, table 6). Authentic nurse leadership improves hospital safety perceptions. The diploma is not the minimum entry into the nursing profession; lower degrees negatively affect nurses' perceptions of the hospital's safety climate (table 6).

Using the nurses' authentic leadership subscale scores as predictors in the model, the results showed that internalised moral and balanced processing (s=0.255 and 0.185) and education level of diploma (−0.129) were significant predictors of the safety climate. The model explained 38.1% of the variance in the safety climate score (F (df=27)=5.782, p=0.001, table 6) (table 5). Internalised moral and balanced processing were weak subdomains of nurses' authentic leadership, resulting in unfavourable safety climate judgements. Again, the diploma is below the Jordanian nursing entry degree, reflecting badly on hospital safety.

Predictors of nurses' authentic leadership

Although the results of the standard regression analysis indicated that the model for authentic leadership was not significant (F (df=23)=1.46, p=0.086, table 6), and it explained only 4.9% of the variance in the score of the authentic leadership, being female and education level of diploma were significant predictors of nurses' authentic leadership (table 6). Thus, female nurses who are highly educated tend to have authentic leadership characteristics.

DISCUSSION

Authentic leadership improves safety climate views. First-time administration of these measures to Jordanian nurses and analysis of authentic leadership and safety climate characteristics will add to the research.

The mean scores on the ALQ and its subscales were 3.00 or higher, which is moderate or desirable, consistent with Dirik and Seren Intepeler[13] and contradictory other studies who reported lower scores,[5 28] reported higher scores.[29] These results suggest nurses perceive authentic leadership at different employment levels and hospitals. In the current study, the mean score for authentic leadership is moderate. Authentic leadership reduces unfavourable safety climate views. As it is below 4, the mean SCS score was 3.68 out of 5, indicating a negative view of the safety climate; in Jordan, the researcher recorded a mean safety climate score of 3.18 out of 5.[8] The latest research includes government and military hospitals in the country's capital, which may explain the difference. Accreditation in Jordan's healthcare system has also increased hospital safety. Studies observed poor safety climate mean scores and some research revealed higher safety climate mean ratings.[22 30]

Item scores of the ALQ

The highest three means of the ALQ were that nurses could list their three most significant strengths and listen very carefully to others' ideas before making decisions, consistent with[14] valuing frontline healthcare providers. Nurses' morals guide what they do as leaders, consistent with the idealised morality of Forsey and Avolio *et al*.[10 26] These particularities of the nurses can provide an advantage in creating a positive climate in their hospitals. However, it should also be considered that increasing the mean score higher than the desirable level will increase this gain in favour of safety climate.

Item scores of the SCS

In contrast to in Jordan, the item-based assessment of the safety climate has shown alarming results that need to be examined.[8] Even when a small number of nurses do nt focus on safety, this might lead to high-risk results; hence, a percentage of problematic responses (PPR) of 10% should be a reference value for health institutions.[13 31] In this investigation, only item 8 (safety climate) had a PPR below 10%. 'Personnel routinely disobey clinical area regulations or guidelines' received the most PPR, indicating an unfavourable impression of organisational leadership.

Most research items had PPRs >10%. High PPR items, indicating a low safety climate, tend to refer to hospital leaders. Items with PPRs <10%, indicating a positive safety atmosphere, are related to respondents' immediate work environment. Individual items pertain to my colleagues encourage me to report safety concerns or respondents' work area (patient safety is

Associations among nurses' authentic leadership and safety climate

Study demonstrated a significant positive moderate connection between authentic leadership and safety climate. Safe

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climates are connected with internalised morals, balanced processing, self-awareness and relational transparency. 'Do the right thing', 'be fair-minded', 'know thyself' and 'be genuine' are true leadership traits that promote a safe environment.[10 13 25 26 32 33] Associating the self-awareness 'know thyself' subscale of the ALQ, which concerns individuals' awareness of their strengths and limitations, with safety climate in terms of the person being aware of information, skills and specialty also increases favourable safety climate perceptions.[34] Relational transparency involves clarity and transparency in relationships,[4 13 16 31 34] and a balanced evaluation of information[11] would result in favourable safety climate perceptions.[13] Safety climate emphasises that administrators should be resourceful to their staff and solicit input from all levels. They should give comments on employees' performances to encourage safety and true leadership. Items 8, 19 and 6 with high mean scores and low PPR emphasise patient safety information and information flow.

Other weak connections were gender, age (inversely) and hospital type. Shahabinejad *et al* confirmed this outcome.[35] Gyekye and Salminen found weak gender-safety connections.[36] As most of the current sample were female nurses, they should assess the hospital's safety climate positively, according to Lin *et al*.[37] The 'younger age group' got the lowest score, contrary to Holden *et al*,[38] who observed substantial variations between age group and safety climate ratings. The sample includes physicians, nurse practitioners, physician assistants, registered nurses, pharmacists and technicians. The disagreement between the present study and Holden *et al*'s study may be due to their sample's heterogeneity, as the present study is homogenous for RNs. Ajslev *et al* found a negative connection between safety climate and sample age. Young workers (18–24 years) had greater accident rates, resulting in low safety climate ratings or perceptions: gender, age (inversely) and hospital type. Most of our hospitals are governmental or military, meaning they are public hospitals; these hospitals in Jordan have several practise concerns compared with private or university-affiliated ones. According to Dirik and Seren Intepeler, Singe *et al* and Gyekye and Salminen,[13 31 36] hospital type had little effect on nurses' views of safety climate . All hospitals should have a safe environment and be well liked by staff.

Authentic leadership, gender and hospital type had modest relationships. Both men and women can be authentic leaders, so it is expected that gender has little effect on authentic leadership, like,[30] who studied the influence of authentic leadership on safety climate while controlling for gender, education, hospital type, work unit and tenure. Considering that most of our samples were women, it is expected that women have a higher potential to be authentic leaders, consistent with Forsey[10] in the Arab countries, who reported that women target increased authentic leadership perceptions.[39 40] Our correlation was low. Because all nurses should be authentic leaders, hospital type had no effect on nurses' authenticity, according to findings.[13]

Predictors of safety climate

In this study, nurses' authentic leadership predicted safety climate, supported by other studies.[10 13] Leaders enforce employees' safety behaviour through a safety climate.[11] When leaders adopt authentic leadership, they create a favourable safety climate.[2 12] Moreover, two subscales of internalised moral and balanced processing significantly predict safety climate.[13] Finally, the education level of the diploma predicted the safety climate contrariwise.

Differences reported in our study confirm results from other studies. Nurses with managerial functions rated safety climate more positively than staff (with Bachelor's degrees) or diploma degrees.[15 31] This pattern is consistent across different countries. These group differences emphasise the importance of considering and differentiating staff groups when analysing safety climate and planning activities to improve patient safety. However, analysis at the item level might be valuable to identify the specific aspects relevant for the different staff groups.

Predictors of nurses' authentic leadership

Although the standard regression analysis results indicated that the model for authentic leadership was not significant, female and highly educated nurses tend to have authentic leadership characteristics. Females, in general, are more focused and more concerned with the details, which means that they are or will become authentic leaders (consistent with[39 40]; this also applies to education; that is, the higher the education is, the higher the authentic leadership will be. A diploma degree in Jordan is not acceptable as an entry into the nursing practice; in the current study associated with low authentic leadership characteristics.

Limitations

This cross-sectional study focused on nurses' views; causality could not be proved, thus results should be considered cautiously. Convenience samples hinder generalisation, hence a larger randomised sample is needed. Authentic leadership and safety climate could also be mediated by other variables. Future research is needed because the current study only predicted 38% of the safety climate.

CONCLUSION

Nurses' authentic leadership was moderate, negatively perceiving the safety climate of the hospitals where they worked. Therefore, interventions that enhance the perception of the safety climate in hospitals are warranted. In addition, nurses' authentic leadership increases their perceptions of a positive safety climate; thus, different strategies are mandated to enhance nurses' authentic leadership characteristics.

Implications for nursing management

Negative perceptions of the safety climate require nurse management to raise employee knowledge. Shared decision-making and supportive leadership increase safety perceptions. Learning culture helps achieve company goals.[13] Establishing a learning environment culture would not happen overnight; it requires information exchange to enable communication between workers and senior management. This will boost favourable perceptions of organisational and authentic leadership and the safety atmosphere. Improving the safety climate may require positive adjustments to work processes[41] and positive attitudes and behaviours from real leaders towards any evidence-based change. Non-conventional leaders are needed to foster a safety climate they will enforce 'voluntary safety-related behaviour'.[17]

Future research should examine other variables affecting safety atmosphere and authentic leadership, including mediators. Recommendations include a bigger, randomised sample from additional healthcare institutions and countries.

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Undergraduate, graduate and continuing education nursing courses should teach safety climate and true leadership.

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