BMC Health Services Research

RESEARCH

Open Access

Impact of clinical leadership on frontline nurses' quality of care: work engagement as mediator role

Xiujuan Xue[1†], Junrong Tao[1†], Yupei Li[1], Guochun Zhang[1], Shuxian Wang[1], Cuiping Xu[1*] and Paulo Moreira[2,3,4,5*]

Abstract

Background Leadership behavior among staff nurses is a critical aspect of healthcare management. Work engagement, characterized by vigor, dedication, and absorption, is a strong predictor of job performance and is believed to enhance the quality of care. However, few studies have explored the relationship between clinical leadership by bedside nurses, work engagement, and quality of care.

Aims To explore relationships between clinical leadership and work engagement on the quality of care and to identify pathways through which clinical leadership may influence care quality via work engagement.

Methods A sample of 1,029 staff nurses from 20 hospitals participated in the study. Three standardized scales were used: The Clinical Leadership Inventory (CLI), the Utrecht Work Engagement Scale-9 (UWES-9), and the nurse-reported quality of care scale. The study followed the STROBE guidelines for cross-sectional research.

Results Findings revealed that clinical leadership, work engagement, and quality of care scores were 4.10 ± 0.66, 4.09 ± 1.16, and 3.26 ± 0.60, respectively. Positive correlations were found between all three variables, with correlation coefficients ranging from 0.297 to 0.960 ($p < .01$). Clinical leadership showed both direct and indirect effects on care quality. When work engagement was included as a mediator, the effect size increased by 0.154 (< 0.001), resulting in a value of 0.411 (< 0.001), with a mediation proportion of 37.56%. The explanatory power of clinical leadership and work engagement for care quality was 75.9%.

Conclusion Enhanced clinical leadership practices are significantly associated with increased nurse work engagement and improved care quality. Clinical leadership directly influences care quality, as well as indirectly through work engagement. These findings could stimulate further international discussions on healthcare management perspectives.

Implications for practice Nursing management should implement clinical leadership development programs tailored for frontline nurses, promoting positive leadership behaviors and work engagement. Creating supportive

[†]Xiujuan Xue and Junrong Tao are co-first authors.

*Correspondence:
Cuiping Xu
xucuiping775@sohu.com
Paulo Moreira
jpm2030@outlook.com

Full list of author information is available at the end of the article

organizational environments that encourage open communication and standardized practices can further enhance clinical leadership and quality of care.

Summary This study found that 1) Nursing management should focus on implementing clinical leadership development programs; 2) Clinical leadership training program for bedside nurses can be enhanced through the use of simulation;3) Supportive organizational environments that promote open communication, and standardized practices should be provided by nurse managers.

Keywords Clinical leadership, Work engagement, Quality of care, Nursing, Bedside nurses, Healthcare management

Introduction

In contemporary healthcare systems, several challenges have been identified that impact the improvement of healthcare delivery. These challenges include long-term ethical issues [1], gaps in nursing knowledge [2], limitations in healthcare technologies [3], difficulties in integrating healthcare services, financial constraints [4], and issues related to international patients [5]. Additionally, clinical leadership is also a key challenge identified internationally and Clinical leadership among bedside nurses, in particular, has been identified as playing a critical role in addressing the multifaceted challenges inherent in patient care [6]. Bedside nurses not only provide direct patient care but also influence the overall quality of care through their leadership capabilities. Effective clinical leadership are essential in managing the complexities of patient care environments [7]. Furthermore, the engagement of nurses in their work is a pivotal factor that impacts the quality of care delivered. The interplay between clinical leadership and work engagement is critical in fostering a culture of continuous improvement and excellence in healthcare [8]. Despite the recognized importance of these elements, research examining how clinical leadership among bedside nurses influences work engagement and, subsequently, the quality of care, remains limited. This study aims to fill the gap by exploring the mediating role of work engagement in the relationship between clinical leadership and quality of care, with the findings contributing to advancing nursing management practices, improving patient care outcomes, and providing insights for developing strategies that enhance both nurse performance and patient outcomes, ultimately supporting the sustainability of healthcare services.

Background

Nurses constitute 59% of all healthcare professionals globally [9]. Like other medical professionals, bedside nurses bear the primary responsibility for delivering holistic care, encompassing physical, mental, social, spiritual, and emotional aspects. This responsibility includes anticipating patient needs, ensuring patient safety, implementing effective nursing interventions, and maintaining the continuity of patient care [10, 11]. In hospitals, where care is becoming more complex, with more demanding and high-acuity patients, shorter lengths of stay, and staffing shortages, nurses face increasingly more challenges [12]. The importance of leadership behaviors by staff nurses has been an increasing subject of discussion [13].

According to the concept of Duignan [14], nurses' clinical leadership refers to nurses at the bedside undertaking the roles of leadership: setting, inspiring, and promoting values and vision, and using their clinical experience and skills to ensure the needs of the patient. Nurses with clinical leadership can identify areas for improvement in advocating for patients and their families, motivate other members of the care team to act on patient care, and lead change initiatives to solve problems that arise in daily clinical practice as well as identify inefficiencies in organizational structures, workflows, policies and procedures that affect the delivery of optimal patient care [12]. Several studies have demonstrated the impact of leadership on positive patient outcomes including the quality of care [15].

Quality of care is recognized not only by the setting of quality standards but also by patient-centered measures including patient safety, satisfaction, and engagement in the care process [16]. High-quality patient care is crucial for patient recovery. In recent years, more and more studies have been undertaken to identify factors contributing to quality of care and ways to address them [17, 18]. Leadership is considered the foundation stone for playing in nurturing a culture that maintains high-quality care ceaselessly and encourages the staff to learn continually to enhance their professional knowledge and skills [19]. However, there is a gap in the literature on the relationship between clinical leadership from nurses at the bedside and the quality of care [12].

Work engagement, characterized by vigor, dedication, and absorption in work, is a robust predictor of job performance [20]. Previous studies always highlight the pivotal role of nurse work engagement in enhancing the quality of care. Engaged nurses, characterized by high levels of commitment and satisfaction in their roles, are crucial in the implementation of evidence-based practices and in delivering patient-centered care [21]. Studies also have further indicated that positive leadership styles such as authentic leadership from nurse leaders

can influence employee work engagement [21–23]. Nevertheless, it remains challenging to distill the relationship between clinical leadership and work engagement on the focus of frontline nurses.

In summary, leadership and work engagement are important variables in the quality of care in nursing institutions. Nursing leadership as an important variable plays a key role in the outcomes of patients. Although research continues to reinforce the importance of clinical leadership and its potential benefits, studies on clinical leadership and quality of care are relatively rare and there is still no research focused on the relationship between frontline nurses' leadership on work engagement. As to the question of what relationship clinical leadership has with work engagement and quality of care, the answer is straightforward–all three are inextricably linked.

Therefore, the main objectives of this study were: (a) to explore the level of clinical leadership, work engagement, and quality of care of Chinese nurses; (b) To explore the relationship between clinical leadership and work engagement on quality of care; (c) To explore the pathways through which clinical leadership impacts care quality, mediated by work engagement of nursing staff.

Methods

Design and participants

The research employed a cross-sectional design. The sample method used was convenience sampling and data were collected between February and March 2024 in 20 Tertiary and Secondary A hospitals including all wards in Shandong Province, China. I sent the electronic questionnaires to the nursing directors, who then forwarded them to the head nurses, and the head nurses distributed them to the staff nurses. The template of the electronic questionnaire was provided by the application "Questionnaire Star," which collected valid questionnaire results. I sent a reminder to those who received the questionnaire one week later. All subjects participated voluntarily, and all data was collected anonymously.

The goal was to determine the relationship between clinical leadership among staff nurses and the quality of care mediated by work engagement. The three questionnaires contained a total of 28 items. According to the principle that the sample size should be at least 10–20 times the number of independent variables and considering a 20% loss to follow-up [24], the sample size ranged from 336 to 672 cases at least.

Inclusion criteria were as follows: (1) all participants were staff nurses at the frontline; (2) all participants were registered nurses and (3) willing to cooperate with the study. Exclusion criteria were as follows: (1) head nurses or nurse managers; (2) mental illness or maternity leave or nurses who were not at the hospital during the investigation; (3) student nurses or nurses for further study in the hospital.

Variables and measurements

The questionnaire consisted of four parts. The first part focused on demographics, such as gender, age, working department, job title, years of work, education, number of children, and hospital grade. The development of items is based on previous literature and clinical experience, and then discussed by several research team members.

The second part was the Clinical Leadership Inventory (CLI), which was used to evaluate staff nurses' current clinical leadership level. The third part utilized the Utrecht Work Engagement Scale-9 (UWES-9) scales to measure the work engagement levels among medical staff. The last part was the quality of care scale. These are briefly explained next.

The Clinical Leadership Inventory (CLI)

The Clinical Leadership Inventory (CLI) comprises 15 items distributed across five domains: challenging the process (three items), inspiring a shared vision (three items), modeling the way (three items), enabling others to act (three items), and encouraging the heart (three items). Each item on the clinical leadership scale is rated on a five-point Likert scale, ranging from 1 (almost never) to 5 (almost always). As previously validated with excellent reliability and validity (Cronbach's α between 0.64 and 0.78 for each subscale) [25]. The Chinese version was tested and validated by other researchers [26], with a Cronbach's α of 0.945.

The Utrecht Work Engagement Scale-9 (UWES-9)

The scale was originally developed by Schaufeli et al. [27] in 2006 and was translated into Chinese by Zhao et al. [28]. It comprises three dimensions: vigor, dedication, and absorption, with 9 items. Utilizing a 0 to 6-point Likert scale. Scores below 2 indicate low engagement, while scores above 4 indicate high engagement, with the intermediate range representing moderate engagement. The Cronbach's α coefficient for the Chinese version is 0.93, indicating good reliability and validity.

The nurse-reported quality of nursing care

The nurse-reported quality of nursing care developed by Lucero et al. [29] measured by a composite score determined as the sum of four items related to the quality of nursing care: overall quality of nursing care on your unit (1 = poor, 4 = excellent); last shift quality of nursing care (1 = poor, 4 = excellent); overall patient safety on your unit (1 = failing/poor, 4 = excellent); and the likelihood that you would recommend your hospital to friends and family if they needed care (1 = definitely no, 4 = definitely yes).

The internal consistency was satisfactory (Cronbach's alpha = 0.80). In this study, the Cronbach α was 0.77.

Statistical analysis

Statistical analysis was performed using R software (version 4.4.3). Descriptive statistics summarized demographic data, with categorical variables reported as frequencies and percentages, and continuous variables as means and standard deviations. Pearson's or Spearman's correlation was used to assess relationships between clinical leadership, work engagement, and quality of care, depending on data normality. For the mediation analysis, structural equation modeling (SEM) was conducted using the "lavaan" and "semPlot" packages in R. Model fit was evaluated using indices such as χ^2/df, GFI, NFI, IFI, TLI, CFI, and RMSEA, with values indicating good fit (GFI, NFI, IFI, TLI, CFI > 0.95; RMSEA < 0.08). Bootstrapping was used to estimate and test the significance of direct, indirect, and total effects in the mediation model. A p-value of less than 0.05 was considered statistically significant.

Ethical considerations

Online informed consent was obtained from all participants on the information page before filling out the questionnaire. Participants were also informed of their right to withdraw from the survey at any time. The survey was approved by the Ethics Committee of The First Affiliated Hospital of Shandong First Medical University & Shandong Provincial Qianfoshan Hospital. [2023] Lun Shen Zi No. S461.

Results

Demographic characteristics

A total of 1071 questionnaires were sent out in this study, and 1029 (96.08%) valid questionnaires were collected, which met the sample size requirement of estimation. There were 114 men (11.08%) and 915 women (88.92%). The main age group of participants was between 25 and 40 years old (84.06%). 54.43% nurses came from the Internal Medicine and Surgical department. 75.51% nurses were Senior and Supervisor Nurses. For more specific demographic characteristics, see Table 1.

Table 1 Demographic characteristics of participants ($n = 1029$)

Variables	Classification	*n*	*f* (%)
Gender	Male	114	11.08
	Female	915	88.92
Age	18 < y ≤ 25	128	12.44
	25 < y ≤ 30	221	21.48
	30 < y ≤ 40	410	39.84
	40 < y ≤ 50	234	22.74
	> 50	36	3.5
Working Department	Internal Medicine	314	30.52
	Surgical	246	23.91
	Obstetrics and Gynecology	37	3.60
	Pediatrics	14	1.36
	Operating Room	57	5.54
	Emergency	41	3.98
	ICU	254	24.68
	Others	66	6.41
Job title	Nurse	168	16.33
	Senior Nurse	360	34.99
	Supervisor Nurse	417	40.52
	Professor	84	8.16
Years of Work Experience	≤ 2	126	12.24
	2 < y ≤ 5	189	18.37
	5 < y ≤ 10	270	26.24
	10 < y ≤ 15	244	23.71
	> 15	200	19.44
Education level	Other degrees	119	11.56
	Undergraduate degrees	886	86.11
	Postgraduate degrees	24	2.33
Marital status	Single	764	74.25
	Married	257	24.97
	Divorced or other	8	0.78
Number of children	0	343	33.33
	1	374	36.35
	>=2	312	30.32
Hospital level	Tertiary A	482	46.84
	Tertiary B	149	14.48
	Secondary A	398	38.68

The correlation and comparison

Table 2 presents the results of the descriptive statistical analysis and correlation assessments of clinical leadership, work engagement and quality of care. Participants scored an average of 4.10 ± 0.66 on the clinical leadership, 4.09 ± 1.16 on the work engagement, 3.26 ± 0.60 on the quality of care. Clinical leadership was correlated with work engagement and quality of care in the overall score and all the sub-scales. The correlation coefficients between the observed variables were ranged from 0.297 to 0.960 ($p < .01$).

The path model of clinical leadership, work engagement and quality of care

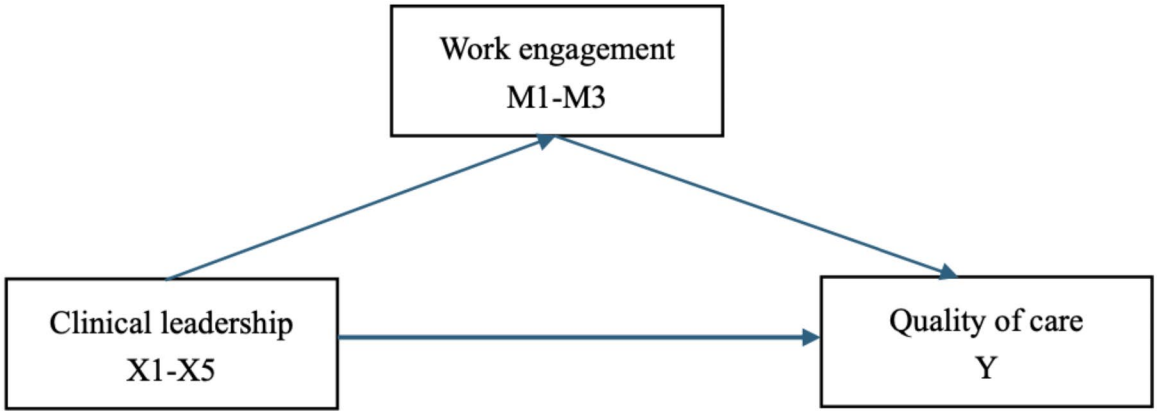
As a first step in the path analysis, the relationships between the variables determined based on the literature review were shown as a figure (Fig. 1), and then the fitness of the model was verified. Clinical leadership had a direct effect on work engagement and quality of care, and work engagement was related to quality of care. Work engagement was also found to mediate the effect of clinical leadership on quality of care. In addition, the results confirmed the mediating effect of work engagement on the relationship between clinical leadership and quality

Table 2 Descriptive analysis and correlations

Variables	Average score	CL	1.1	1.2	1.3	1.4	1.5	2. WE	2.1	2.2	2.3	3. QOC
1.CL	4.10 ± 0.66	1.000										
1.1		0.781**	1.000									
1.2		0.884**	0.763**	1.000								
1.3		0.904**	0.552**	0.722**	1.000							
1.4		0.890**	0.512**	0.683**	0.852**	1.000						
1.5		0.854**	0.478**	0.607**	0.810**	0.833**	1.000					
2.WE	4.09 ± 1.16	0.513**	0.404**	0.507**	0.461**	0.428**	0.404**	1.000				
2.1		0.540**	0.418**	0.499**	0.491**	0.466**	0.454**	0.918**	1.000			
2.2		0.468**	0.366**	0.470**	0.422**	0.387**	0.365**	0.960**	0.838**	1.000		
2.3		0.447**	0.361**	0.465**	0.396**	0.365**	0.330**	0.942**	0.772**	0.870**	1.000	
3.QOC	3.26 ± 0.60	0.411**	0.297**	0.391**	0.380**	0.358**	0.347**	0.430**	0.399**	0.415**	0.398**	1.000
AVE		0.725						0.709				0.915

1. *CL* Clinical Leadership; 2. *WE* Work Engagement; 3. *QOC* quality of nursing care; 1.1: challenging the process; 1.2: inspiring a shared vision; 1.3: enabling others to act; 1.4: modeling the way; 1.5: encouraging the heart; 2.1 absorption; 2.2 dedication; 2.3 vigor. *AVE* Average Variance Extraction

** $P < 0.01$



X= Independent variable; M=Mediating variable; Y=dependent variable; X1=Challenging the process; X2= Inspiring a shared vision; X3= Enabling others to act; X4= Modeling the way; X5= Encouraging the heart; M1=Absorption; M2=Dedication; M3=Vigor

Fig. 1 The relationships between the variables

of care. The values of the fitness indices were as follows: $\chi2 = 176.906$, $\chi2/df = 7.692$, GFI = 0.963, NFI = 0.977, IFI = 0.980, TLI = 0.969, CFI = 0.980, and RMSEA = 0.081. The fit was thus considered to be appropriate. As the second step in the path analysis, the analysis of the path coefficients of the model showed that the effects of clinical leadership (CR = 7.372, $p < .001$) and work engagement (CR = 9.368, $p < .001$) on the path coefficient for quality of care were significant (Table 3).

The mediating effect of work engagement on the effect of clinical leadership on quality of care

In this study, the total effect was study, the total effect was decomposed into a direct effect and an indirect effect for the effect decomposition of the path analysis. Using a bootstrapping procedure to estimate the sampling distributions of estimators of direct and indirect effect, the significance of the indirect effect and total effect was verified (Table 3). For the path from clinical leadership to work engagement, the effect size was 0.494 ($p < .001$); for the path from work engagement to quality of care, the effect size was 0.311 ($p < .001$); and for the path from clinical leadership to quality of care, the effect size was 0.257 ($p < .001$), and all paths were significant. Turning to the effect of clinical leadership on quality of care, when work engagement was added as a mediator, the effect size increased by 0.154 (< 0.001), resulting in a value of 0.411(< 0.001); indirect effects were significant, and work engagement performed the role of a partial mediator. The mediation proportion was 37.56%. For quality of care, clinical leadership had statistically significant direct, indirect, and total effects; Work engagement showed statistically significant direct effects. The explanatory power of these variables in relation to quality of care was 75.9%. The results of the mediation model analysis are shown in Fig. 2.

Discussion

Key findings and relation to previous research

The present study first explored the level of clinical leadership, work engagement and quality of care of nurses.

Table 3 Total, direct, and indirect effects of the pathway model

Endogenous variables	Predictor variables	C.E	S.E	C.R(p)	Direct effect(p)	Indirect effect(p)	Total effect(p)	SMC
QOC	CL	0.257	0.043	7.372 (< 0.001)	0.257 (< 0.001)	0.154 (< 0.001)	0.411 (< 0.001)	0.759
	WE	0.311	0.020	9.368 (< 0.001)	0.311 (< 0.001)			
WE	CL	0.494	0.076	13.209 (< 0.001)	0.494 (< 0.001)		0.494 (< 0.001)	0.756

C.E. Coefficient estimate, *C.R.* Critical ratio, *S.E.* Standard error, *SMC* Squared multiple correlations

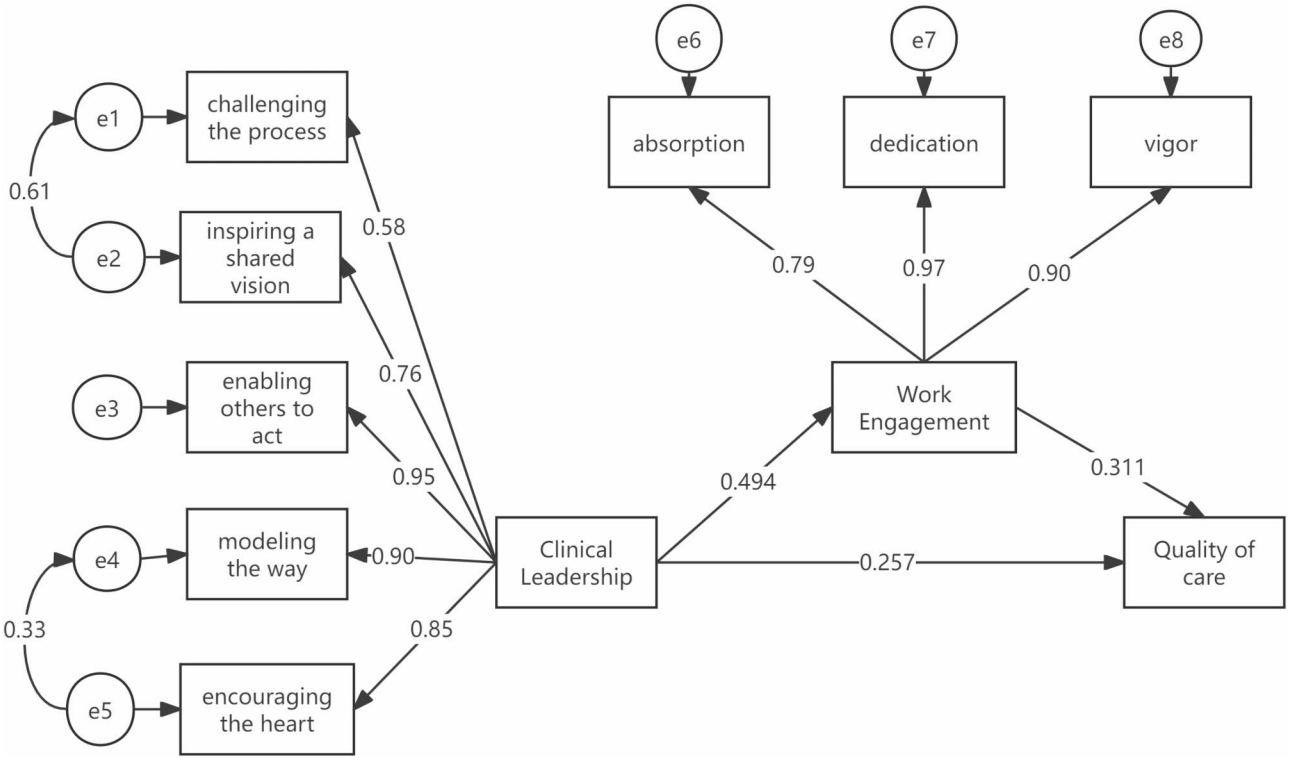


Fig. 2 The Model

The results suggest that the three variables were relatively moderate to high in the participant nurses. This is consistent with previous studies [30–32]. The current study also explored the relationship between the clinical leadership and quality of care in nursing and tested the intermediary role of work engagement through a mediation effect, which supplemented the shortcomings of the existing literature.

Previous research suggests that clinical leadership, in the context of registered nurses in a dynamic and adapting health care system, is of vast importance particularly in relation to patient safety and risk management [33].

The correlation analysis results of this study suggests that there was significant correlation between the total score on the clinical leadership, work engagement and the score of the quality-of-care scale. Nurses at the bedside could identify areas for improvement in advocating for patients and their families, motivate other members of the care team to act on patient care, and lead change initiatives to solve problems that arise in daily clinical practice and leading high quality of nursing care. This is in line with previous studies too [12]. In addition, the results of our study also showed that clinical leadership emerges as a fundamental element that directly influences both work engagement and nursing care quality. Higher levels of clinical leadership are associated with increased motivation and job satisfaction, which correlates with higher scores in patient care quality. The positive influence of clinical leadership on work engagement manifests in greater dedication and vigor in nursing tasks, highlighting the pivotal role of leadership in fostering an environment where nurses can thrive and perform at their best. This is in line with recent research on Transformational leadership in healthcare claiming that bringing more focus to leadership education in nursing can have a relevant impact on making future nursing leaders more effective, able to cultivate efficient teamwork, improve quality nursing work environment, and, ultimately, safe and efficient patient outcomes [34].

The study also explored the mediating effects of work engagement on the relationship between clinical leadership and quality of care. The results showed clinical leadership can directly influence quality of care. The higher the level of clinical leadership among nurses, the more actively they can engage in teamwork, resulting in richer care, understanding, and support for both patients and colleagues. This, in turn, has been associated in other studies as a potential to enhance nursing quality of care [35, 36]. Conversely, lower levels of clinical leadership may lead to a sense of insufficient guidance and support for nurses, with communication and collaboration issues within the team, as also other recent research identified [36, 37]. Nurses with low clinical leadership may struggle to effectively address the pain and challenges faced by patients. These factors can contribute to increased work stress and, consequently, low quality of care [31].

Clinical leadership can also indirectly influence quality of care through work engagement, as recent research also suggests [37, 38]. As the level of clinical leadership among nurses increases, so does their level of work engagement, leading to higher quality of nursing work. Work engagement is a crucial personal psychological trait characterized by a positive attitude and concentration exhibited by nurses when facing work-related stress and challenges as also identified in recent research [39, 40]. When nurses exhibit strong leadership skills, such as effective communication, support, and vision-sharing, they significantly boost the work engagement in their practice. Additionally, nurses with high work engagement tend to establish closer relationships with patients and provide more comprehensive nursing services, thereby enhancing nursing quality. This mediation is crucial because it encapsulates the indirect yet powerful influence of leadership practices on the front lines of healthcare. By fostering a committed and focused nursing staff, clinical leaders indirectly shape the outcomes of patient care, thereby validating the importance of investing in leadership development within healthcare institutions [41].

Limitations and further research

This study has several limitations. First, as a cross-sectional study, it identifies correlations between variables but cannot establish causality. Future studies should consider longitudinal designs to address this. Second, the use of self-reported questionnaires may introduce biases such as social desirability, response, and recall biases. Third, the convenience sampling method may limit the generalizability of the findings. Future research should aim for a more representative sample to enhance external validity. Finally, while this study examined mediating relationships, it did not explore potential moderating variables. Future research should investigate other factors that might influence the mediators of work engagement.

Implications for health services and nursing management

This study, building from recent trends in healthcare and nursing management [36, 42, 43], reviewed the relationship between clinical leadership and quality of care, highlighting the mediating effect of work engagement. Nursing management should focus on implementing clinical leadership development programs tailored for frontline nurses, encompassing theory- and evidence-based practices. The development of effective clinical leadership training programs in bedside-nurses can be enriched through the use of simulation. Previous studies demonstrated the effectiveness of simulation-based management and leadership scenarios in improving effective leadership skills management skills in nurses including delegation skills, interpersonal and communication skills, and problem-solving abilities [44, 45]. Additionally, supportive organizational environments that promote open communication and standardized practices should be provided by nurse managers to enhance clinical leadership and work engagement.

These findings provide a basis for developing policies aimed at the efficient management of nursing staff by identifying issues related to clinical leadership and its influencing factors. Nursing managers should focus on fostering clinical leadership skills among nurses by providing continuous professional development opportunities and ensuring supportive organizational environments that promote open communication and standardized practices. Regular assessment and refinement of strategies to enhance nurses' clinical leadership skills are essential, ensuring that these practices contribute to both academic knowledge and clinical effectiveness. This study is meaningful as it demonstrates practical methods that can be applied clinically to improve nurse retention, work engagement, and the overall quality of care.

Conclusion

In conclusion, the results of this study suggest that enhanced clinical leadership practices are significantly associated with increased nurse work engagement and improved quality of care. Positive clinical leadership behaviors in frontline nurses were linked to higher levels of work engagement among nurses, which in turn contributed to and improved quality of care. Implementing empirically based education and leadership development programs for nurse managers can foster effective clinical leadership. These measures can serve as promising organizational strategies to enhance work engagement, reduce adverse events, and improve the overall quality of care. This is a key healthcare management topic of international interest.

Acknowledgements

n.a.

Authors' contributions

HW: Formal analysis, Software, Writing– original draft. PJX: Data curation, Writing– original draft. CDZ: Data curation, Writing– original draft. JXZ: Writing– original draft. CHY: Software, Conceptualization. LY: Conceptualization, Methodology, Writing– review & editing. PM: validation, Writing-review & Editing.

Funding

This research did not receive any funding.

Data availability

The data supporting the results of this study are available from the corresponding authors upon reasonable request.

Declarations

Ethics approval and consent to participate

The Research Ethics Subcommittee of the Medical Ethics Committee of the First Affiliated Hospital of Shandong First Medical University accepted this

study under Ethics [2023] Lun Shen Zi No. S461. All procedures performed in this study were by the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards.

Consent for publication
Non applicable.

Competing interests
The authors declare no competing interests.

Author details
[1]Department of Nursing, The First Affiliated Hospital of Shandong First Medical, University & Shandong Provincial Qianfoshan Hospital, Jinan, Shandong, China
[2]International Healthcare Management Research and Development Center (IHM-RDC), the First Affiliated Hospital of the Shandong First Medical University and Shandong Provincial Qianfoshan Hospital, Jinan, China
[3]School of Social Affairs, Henan Normal University, Xinxiang, Henan, China
[4]Atlantica Instituto Universitario, Gestao em Saude, Oeiras, Portugal
[5]University of Manchester, Faculty of Biology, Medicine and Health, Manchester, UK

Received: 5 November 2024 / Accepted: 4 March 2025
Published online: 16 April 2025

References

1. Afzal S, Arshad A. Ethical issues among healthcare workers using electronic medical records: A systematic review. Comput Methods Programs Biomed Update. 2021;1:100030.
2. Gassas R. Sources of the knowledge-practice gap in nursing: lessons from an integrative review. Nurs Educ Today. 2021;106:105095.
3. Kearns A, Moorhead A, Mulvenna M, Bond R. Assessing the uses, benefits, and limitations of digital technologies used by health professionals in supporting obesity and mental health communication. Scoping Rev J Med Internet Res. 2025;27:e58434.
4. Wakida EK, Okello ES, Rukundo GZ, Akena D, Alele PE, Talib ZM, Obua C. Health system constraints in integrating mental health services into primary healthcare in rural Uganda: perspectives of primary care providers. Int J Ment Health Sy. 2019;13(1):16.
5. Kume A, Lau Y, Kume M. Issues commonly faced by nurses caring for international patients: A qualitative study. Int Nurs Rev. 2023;70(2):239–46.
6. Booher L, Yates E, Claus S, Haight K, Burchill CN. Leadership self-perception of clinical nurses at the bedside: A qualitative descriptive study. J Clin Nurs. 2021;30(11–12):1573–83.
7. Qtait M. Nurses' leadership in the work: A systematic review. Afr J Nurs Midwifery. 2023;25(1):15.
8. Feliciano AZ, Feliciano EE, Osman A, Nabong IA, Yumang JS, Apostol AP, Lopez RL Jr, Salunga FF, Roque ML. Integrating leadership with work engagement in nursing: A correlational study. Int J Adv Appl Sci. 2022;9(11):1–9.
9. World HO. State of the world's nursing 2020: Investing in education, jobs and leadership. 2020.
10. Alshehry AS, Alquwez N, Almazan J, Namis IM, Cruz JP. Influence of workplace incivility on the quality of nursing care. J Clin Nurs. 2019;28(23–24):4582–94.
11. American Nurses Association. Violence, incivility, & bullying. Nursingworld. 2019. https://www.nursingworld.org/practice-policy/work-environment/violence-incivility-bullying. Accessed 19 Feb 2025.
12. Guibert Lacasa C, Vázquez Calatayud M. Nurses' clinical leadership in the hospital setting: A systematic review. J Nurs Manage. 2022;30(4):913–25.
13. Simmons SW, Jacobs S, McKillop A. Developing clinical leadership in new Zealand hospice staff nurses. Int J Palliat Nurs. 2020;26(5):200–5.
14. Duignan M, Drennan J, McCarthy VJ. Impact of clinical leadership in advanced practice roles on outcomes in health care: A scoping review. J Nurs Manage. 2021;29(4):613–22.
15. Akbiyik A, Korhan EA, Kiray S, Kirsan M. The Effect of Nurses 'Leadership Behavior on the Quality of Nursing Care and Patient Outcomes. Creat Nurs. 2020;26(1):8–18.
16. Stavropoulou A, Rovithis M, Kelesi M, Vasilopoulos G, Sigala E, Papageorgiou D, Moudatsou M, Koukouli S. What quality of care means? Exploring clinical nurses' perceptions on the concept of quality care: a qualitative study. Clin Pract. 2022;12(4):468–81.
17. Bellio E, Buccoliero L. Main factors affecting perceived quality in healthcare: a patient perspective approach. TQM J. 2021;33(7):176–92.
18. Bombard Y, Baker GR, Orlando E, Fancott C, Bhatia P, Casalino S, Onate K, Denis J, Pomey M. Engaging patients to improve quality of care: a systematic review. Implement Sci. 2018;13:1–22.
19. Xing L, Song J, Yan F. How can leadership influence the quality of care in a health-care organization? Front Nurs. 2020;7(1):19–22.
20. Szilvassy P, Širok K. Importance of work engagement in primary healthcare. BMC Health Serv Res. 2022;22(1):1044.
21. Wee KZ, Lai AY. Work engagement and patient quality of care: a meta-analysis and systematic review. Med Care Res Rev. 2022;79(3):345–58.
22. Assi H, Rayan A, Eshah NF, Albashtawy M, Al-Ghabeesh SH. Nurse managers' authentic leadership and their relationship with work engagement among registered nurses. In: 2024/1/1 2024. Wiley Online Library; 2024. p. 7523906. https://doi.org/10.1155/2024/7523906.
23. Decuypere A, Schaufeli W. Leadership and work engagement: exploring explanatory mechanisms. German J Hum Resource Manage. 2020;34(1):69–95.
24. Nicolaou AI, Masoner MM. Sample size requirements in structural equation models under standard conditions. Int J Acc Inf Sy. 2013;14(4):256–74.
25. Patrick A, Laschinger HKS, Wong C, Finegan J. Developing and testing a new measure of staff nurse clinical leadership: the clinical leadership survey. J Nurs Manage. 2011;19(4):449–60.
26. Xu K. The survey on clinical leadership of nurses in tertiary hospitals in China. Master. Peking Union Medical College; 2021. Unpublished Thesis available at CNKI. https://doi.org/10.27648/d.cnki.gzxhu.2021.000712.
27. Schaufeli WB, Bakker AB, Salanova M. The measurement of work engagement with a short questionnaire: A cross-national study. Educ Psychol Meas. 2006;66(4):701–16.
28. Zhao G. The relationship between organizational support, psychological capital, and employee engagement in the workplace. Hangzhou: Master. Z. G. University; 2011.
29. Lucero RJ, Lake ET, Aiken LH. Variations in nursing care quality across hospitals. J Adv Nurs. 2009;65(11):2299–310.
30. Jin M, Wang JL, Zeng L, Xie WQ, Tang P, Yuan ZQ. Professional quality of life among Chinese nurses: a systematic review. Chin J Nurs Educ. 2022;19(04):352–9.
31. Li H, Chang H, Tao Z, Zhang D, Shi Y, Li X. Mediating effect of coping style on the relationship between clinical leadership and quality of work life among nurses in tertiary-level hospitals in China: a cross-sectional study. BMJ Open. 2021;11(2):e41862.
32. Wan Q, Zhou W, Li Z, Shang S, Yu F. Work engagement and its predictors in registered nurses: A cross-sectional design. Nurs Health Sci. 2018;20(4):415–21.
33. Dennis U. Clinical leadership as a corollary for professional practice and patient safety. Int J Emerg Ment Health. 2022;17(1):262–6.
34. Ystaas LMK, Nikitara M, Ghobrial S, Latzourakis E, Polychronis G, Constantinou CS. The impact of transformational leadership in the nursing work environment and patients' outcomes: A systematic review. Nurs Rep. 2023;13(3):1271–90. https://doi.org/10.3390/nursrep13030108. PMID: 37755351; PMCID: PMC10537672.
35. Beiboer C, Andela R, Hafsteinsdóttir TB, Weldam S, Holtrop T, van der Cingel M. Teamwork, clinical leadership skills and environmental factors that influence missed nursing care–A qualitative study on hospital wards. Nurs Educ Pract. 2023;68:103603.
36. Restivo V, Minutolo G, Battaglini A, Carli A, Capraro M, Gaeta M, Odone A, Trucchi C, Favaretti C, Vitale F, Casuccio A. Leadership effectiveness in healthcare settings: A systematic review and Meta-Analysis of Cross-Sectional and Before-After studies. Int J Environ Res Public Health. 2022;19(17):10995. https://doi.org/10.3390/ijerph191710995. PMID: 36078706; PMCID: PMC9518077.
37. Nachtergaele S, De Roo N, Allart J, et al. Exploring influencing factors to clinical leadership development: a qualitative study with healthcare professionals in Flemish nursing homes. BMC Health Serv Res. 2024;24:1169. https://doi.org/10.1186/s12913-024-11613-9.
38. Sfantou DF, Laliotis A, Patelarou AE, Sifaki-Pistolla D, Matalliotakis M, Patelarou E. Importance of leadership style towards quality of care measures in

healthcare settings: A systematic review. Healthc (Basel). 2017;5(4):73. https://doi.org/10.3390/healthcare5040073. PMID: 29036901; PMCID: PMC5746707.
39. Sayed S, Ahmed MZ, Bakr MM, Sherief NM. Work engagement in nursing: A concept analysis. Menoufia Nurs J. 2019;4(2):15–22.
40. Aungsuroch Y, Gunawan J, Juanamasta IG, Montayre J. Updating factors influencing nurse work engagement in the hospital settings: A systematic review. J Healthc Leadersh. 2024;16:157–76. https://doi.org/10.2147/JHL.S451056. PMID: 38523801; PMCID: PMC10961065.
41. Alsadaan N, Salameh B, Reshia FAAE, Alruwaili RF, Alruwaili M, Awad Ali SA, Alruwaili AN, Hefnawy GR, Alshammari MSS, Alrumayh AGR. Impact of nurse leaders behaviors on nursing staff performance: A systematic review of literature. Inquiry. 2023;60:1428195040.
42. Antunes V. On Nursing Research and Evidence-Based Practice: Topics for researchers and practitioners. Int Healthc Rev. 2022;1(1). https://doi.org/10.56226/ihr.v1i1.12.
43. Quadros A, Dsouza B, Mundkur S, Thomas J. On Assessing Compliance and Attitude to patient safety goal of patient identification among nurses: A cross-sectional observational survey. Int Healthc Rev. 2024. https://doi.org/10.56226/58.
44. Labrague LJ. Use of simulation in teaching nursing leadership and management course: an integrative review. Sultan Qaboos Univ Med J. 2021;21(3):344–53.
45. Riaz S, Tabassum M. Effects of simulation-based education on improving leadership skills in medical and nursing students: A systematic review. J Experimental Clin Med. 2023;40(4):783–91.

Publisher's Note