International Journal of Nursing Sciences xxx (xxxx) xxx

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Contents lists available at ScienceDirect

International Journal of Nursing Sciences

journal homepage: http://www.elsevier.com/journals/international-journal-of-nursing-sciences/2352-0132

Research Paper

Adaptive leadership in advancing professionalism among clinical nurse educators: A mixed-methods study

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ARTICLE INFO

Article history:
Received 30 June 2025
Received in revised form
23 November 2025
Accepted 29 April 2026
Available online xxx

Keywords:
Clinical nurse educator
Professionalism
Adaptive leadership
Mixed-methods design
Cross-sectional study
Qualitative research

ABSTRACT

Objectives: To investigate the professionalism among clinical nurse educators and examine how adaptive leadership supports their transition from clinical practice to educational roles.
Methods: A sequential explanatory mixed-methods design, informed by Wheel of Professionalism in Nursing theory and Adaptive Leadership Theory, was conducted between December 2021 and January 2022. Participants comprised registered nurses from teaching hospitals across five provinces and municipalities in China (Shanghai, Zhejiang, Chongqing, Hebei, and Shanxi). Quantitative data were collected through a multi-center cross-sectional survey involving 669 respondents using the Behavioral Inventory for Professionalism in Nursing. Qualitative data were obtained via focus group interviews with 12 purposively selected participants. Data integration was conducted through content analysis, structured around key dimensions of professionalism.
Results: The professionalism score was significantly lower among clinical nurse educators than among their managers [11.00 (8.50, 14.00) vs. 15.00 (9.25, 19.50), $Z = -4.110$, $P < 0.001$), indicating a discrepancy in perceived professionalism. No significant differences were observed in adherence to the code for nurse, theory-related domains or publication and communication ($P > 0.05$), whereas significant differences were found across the remaining six dimensions ($P < 0.05$). Qualitative findings yielded three themes: 1) adaptive alignment with institutional priorities; 2) driving change within complexity; and 3) contributing to social and professional impact. These findings illustrate how adaptive leadership processes shape the development and enactment of professionalism, particularly in navigating role transition and organizational expectations.
Conclusions: Clinical nurse educators demonstrate comparatively lower levels of professionalism than their managers' expectations, with gaps concentrated in multiple practice domains. Adaptive leadership plays a pivotal role in bridging these gaps by enabling clinical nurse educators to respond to complex role demands and evolving institutional contexts. Targeted strategies, including structured training, organizational support, and policy-level interventions, are essential to strengthen professionalism and support sustainable workforce development.

What is know?

- Professionalism is fundamental to nursing education, with clinical nurse educators playing a critical role in shaping professional values.
- The transition from clinician to educator introduces role ambiguity and competing demands, yet existing evidence largely describes these challenges without explaining how professionalism develops in response to them.
- Adaptive leadership is increasingly invoked in healthcare, yet its role in shaping professionalism remains underexplored.

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Peer review under responsibility of Chinese Nursing Association.

https://doi.org/10.1016/j.ijnss.2026.04.017

Please cite this article as: X. Wang, N. Cui, F. Wen *et al.*, Adaptive leadership in advancing professionalism among clinical nurse educators: A mixed-methods study, International Journal of Nursing Sciences, https://doi.org/10.1016/j.ijnss.2026.04.017

What is new?

- This study identifies a significant gap between clinical nurse educators and their managers in professionalism scores, with differences concentrated across multiple practice domains rather than ethical or theoretical aspects.
- Professionalism among clinical nurse educators is not static but dynamically constructed through adaptive leadership processes in complex clinical-educational environments.
- This mixed-methods study reframes professionalism as a context-dependent capability and identifies actionable levers for workforce development and policy intervention.

1. Introduction

Professionalism is a cornerstone of medical and nursing education, encompassing the values, ethical principles, and behavioral standards that underpin patient trust, safety, and quality of care [1,2]. As the International Council of Nurses (ICN) continues to refine the definition of nursing and the role of the nurse, professionalism is increasingly conceptualized as a multidimensional construct that integrates technical competence with a sustained commitment to caring science, ethical responsibility, and the protection of vulnerable populations [3–5]. Despite its central importance, significant challenges persist. Limited societal recognition of nursing's professional value has contributed to declining professional commitment and increasing turnover intentions, threatening workforce stability [6]. Moreover, professionalism is shaped not only through formal education but also through the "hidden curriculum," where discrepancies between taught ideals and observed clinical practices may undermine professional identity formation [7,8]. These misalignments, compounded by disruptions in clinical education and growing dissatisfaction among students and early-career nurses, weaken mentorship and career development, posing risks to workforce sustainability [7,9].

Clinical Nurse Educators (CNEs), also referred to as clinical nursing instructors, clinical nurse teachers, or practitioner-teachers, are uniquely positioned to shape and sustain professionalism in practice [10,11]. As practitioner-educators are embedded in clinical settings, they facilitate the integration of theoretical knowledge and clinical practice, mentor nurses at various career stages, and design educational strategies to enhance competence and critical thinking [11,12]. Beyond formal teaching responsibilities, CNEs play a pivotal role in translating professional values into practice by modeling ethical behaviors, fostering reflective learning, and shaping the clinical learning environment. Their role in mediating the hidden curriculum positions them as key agents in professional socialization and identity formation [8,13]. Strengthening the professionalism of CNEs is therefore critical to improving educational quality, supporting workforce retention, and sustaining the nursing profession.

As healthcare systems become more complex, the role of CNEs in bridging clinical practice and professional education has become increasingly important [14]. However, substantial cross-national variation persists in the preparation, credentialing, and professional expectations associated with this role. In high-income countries such as the United States, the United Kingdom, Australia, and Canada, CNE preparation is typically supported by structured educational training and leadership development, often formalized through standardized certification pathways [15–17]. In China, the development of CNEs has progressed through the implementation of the "double-qualified" model, first introduced in 1995 and subsequently strengthened through ongoing policy initiatives. This model emphasizes the integration of clinical expertise and teaching competence and reflects sustained national efforts to enhance clinical education capacity [18,19]. While variability in implementation remains across institutions, recent research has further delineated core competency frameworks for Chinese CNEs, including clinical instruction, nursing practice, leadership, management, and innovation [20].

Notwithstanding these advances, effective performance in the CNE role extends beyond the acquisition of technical and pedagogical competencies. Professionalism is increasingly conceptualized as a dynamic, context-dependent construct shaped by organizational and sociocultural influences [21,22]. Its enactment depends on individuals' adaptive capacity to manage role ambiguity, negotiate competing demands, and sustain continuous learning. This perspective is particularly salient in the post-pandemic context, where shifting clinical priorities and heightened ethical expectations have redefined professional practice [23]. Concepts such as moral agency, resilience, and aspirational identity have thus gained prominence [5,24], underscoring the need to reconceptualize CNEs not only as educators but also as adaptive and ethically grounded leaders.

Adaptive leadership, emphasizing responsiveness, flexibility, and resilience, offers a valuable framework for navigating this complexity [25,26]. This perspective positions leadership as a practice rather than a formal managerial authority, highlighting leadership as a process grounded in collective learning, experimentation, and problem-solving within organizations [25]. DeRue's [26] work further conceptualizes leadership as a dynamic social interaction in which individuals engage in iterative leading-following exchanges, through which leader-follower identities and relationships are jointly constructed over time while individuals simultaneously develop their capabilities within the organization. Such a view aligns with a socially engaged and culturally responsive form of professionalism, cultivated through mentorship, collaboration, and reflective practice [2]. Despite its relevance, research has predominantly focused on competency frameworks or descriptive accounts of role expectations, with limited attention to the mechanisms underlying the enactment, negotiation, and sustenance of professionalism in complex clinical education contexts [21,27]. In particular, there is a lack of empirical evidence on how CNEs draw on adaptive leadership capacities to navigate dual clinical-educational roles and how these adaptive processes contribute to professionalism development [28].

Therefore, this study aimed to investigate the professionalism of CNEs and examine how adaptive leadership supports their transition from clinical practice to educational roles. The specific objectives were: 1) to explore how professionalism is shaped among CNEs; and 2) to generate new insights into nursing professionalism through the lens of adaptive leadership. The findings are intended to inform strategies for strengthening CNE development and nursing education systems.

2. Methods

2.1. Study design

The study employed an explanatory sequential mixed-methods approach, informed by Fetters' integration framework [29]. The design comprised an initial quantitative phase followed by a qualitative phase, with integration occurring at the interpretation stage to generate meta-inferences. This approach enabled the identification of patterns in professionalism and the subsequent exploration of underlying mechanisms. Study findings were reported in accordance with the Good Reporting of a Mixed Methods Study (GRAMMS) checklist [30].

2.2. Theoretical framework

As illustrated in Fig. 1, this study was guided by the integration of two complementary theoretical perspectives through theoretical triangulation and construct synthesis [31,32]. The Wheel of Professionalism in Nursing theory provided a structured framework for conceptualizing professionalism as a multidimensional construct. Its domains, including autonomy, lifelong learning, research engagement, theory application, ethical conduct, and professional participation, were used to define measurable indicators of professional behavior [33]. However, as professionalism is inherently context-dependent and enacted in practice, a purely competency-based framework is insufficient to capture its dynamic nature, particularly in the context of CNEs. To address this limitation, Adaptive Leadership Theory introduces a process-oriented perspective, conceptualizing leadership as a relational and evolving practice embedded within complex systems [26]. It emphasizes key processes, including leading and following interactions, the construction of leadership identity, and the emergence of leader-follower relationships and structures. These processes are highly relevant to CNEs, who operate across clinical and educational domains and must continuously negotiate role expectations, boundary conditions, and competing demands.

To ensure coherence across study phases, a triangulation matrix was developed to systematically align professionalism domains with adaptive leadership processes. This matrix served as a unifying analytical framework across study phases: guiding variable operationalization in the quantitative component, informing the design of qualitative inquiry, and structuring data integration. Through this approach, professionalism is examined not only as a set of measurable competencies but as an adaptive, contextually enacted process shaped by leadership dynamics.

2.3. Quantitative study

2.3.1. Study design and participants

A multicenter descriptive cross-sectional survey was conducted between December 2021 and January 2022. Convenience sampling was used to recruit participants from teaching hospitals affiliated with universities across five provinces and municipalities in China (Shanghai, Zhejiang, Chongqing, Hebei, and Shanxi). Eligible participants were registered nurses holding a university teacher qualification certificate who: 1) were currently appointed as CNEs according to institutional criteria; and 2) were responsible for supervising nursing student placements and delivering continuing education for ward-based nurses. Nurses not directly involved in clinical teaching activities were excluded.

2.3.2. Sample size

The sample size was calculated based on estimates of the population mean in cross-sectional studies. Using G*power 3.1 software and assuming a standard deviation of 4.22, a permissible error of 0.5, and a two-sided significance level of 0.05 (95 % confidence interval) [34], the minimum required sample size was estimated at 274 participants. Allowing for a 10 % rate of invalid or incomplete responses, the target sample size was increased to at least 302 participants. This was considered adequate to ensure statistical precision and support multivariate analyses.

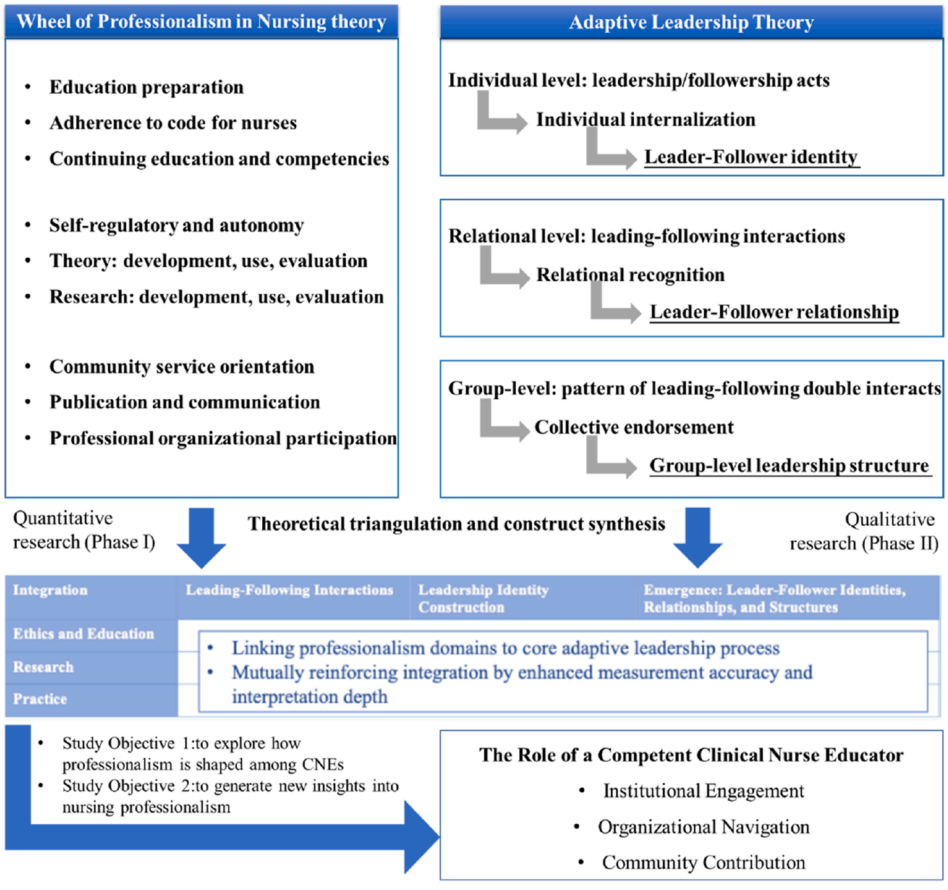

Fig. 1. Theoretical framework guiding this study.

2.3.3. Measures

A self-designed questionnaire was used to collect sociodemographic and occupational characteristics (e.g., age, employing hospital, teaching experience, length of service in the current role), and teaching-related behavioral characteristics.

Professional characteristics and behaviors were assessed using the Chinese version of the Behavioral Inventory for Professionalism in Nursing (BIPN). The original instrument was developed based on Miller's Wheel of Professionalism in Nursing, and reported Cronbach's α coefficients ranging from 0.74 to 0.87 [33]. The Chinese version was used with authorization and had undergone prior cultural adaptation and validation [24,34]. The BIPN comprises 45 items, including 8 demographic (e.g., years in practice, years of teaching, current role duration, professional title, and position) and 37 professionalism-related items categorized into 9 behavioural domains: educational preparation, adherence to code for nurses, continuing education and competencies, self-regulatory and autonomy, theory (development, use, and evaluation), research (development, use, and evaluation), community service orientation, publication and communication, and professional organizational participation. Each domain is scored from 0 to 3, with a total possible score of 0 to 27, where higher scores indicate greater professionalism. The instrument demonstrated strong internal consistency in this study (Cronbach's $\alpha = 0.865$).

2.3.4. Data collection and quality control

Data were collected electronically using the Wenjuan Xing platform (comparable to Qualtrics). The original paper-based questionnaire was converted into a digital format and pilot-tested before formal administration to ensure clarity, reliability, and usability. Four trained investigators were responsible for questionnaire distribution and coordination with the target hospitals, with access to the CNEs population facilitated by the CNE manager and the deputy director of the nursing department. Participation was voluntary, and respondents were informed of their right to withdraw at any time without any negative consequences. To ensure data integrity, one researcher independently conducted blinded, real-time monitoring of the survey platform for data management. Built-in quality control measures included mandatory response fields, logical validation checks, and restrictions to prevent duplicate submissions. Data collection was continuously monitored to ensure completeness and internal consistency, and a three-member research team was assigned to oversee data verification and quality assurance procedures throughout the study period.

2.3.5. Data analysis

Quantitative data were analyzed using SPSS version 26.0. Descriptive statistics summarized demographic characteristics and professionalism scores. Continuous variables were assessed for normality and are presented as the mean ± standard deviation (*SD*) or median with the 25th and 75th percentiles, as appropriate. Differences in professionalism behavioral category scores between CNEs and CNE managers were examined using the Mann-Whitney *U* test. All statistical tests were two-tailed, and $P < 0.05$ was considered statistically significant. Within this adaptive system, CNE managers and CNEs occupy distinct yet interdependent roles, with managers shaping organizational conditions through leadership, resource allocation, and professional development, whereas CNEs enact professionalism in daily educational practice. Comparing these groups helps determine whether professionalism is aligned across leadership levels and identify gaps between managerial expectations and frontline practice.

2.4. Qualitative study

2.4.1. Study participants

Qualitative sampling was guided by an advanced case-oriented approach and informed by variation in participants' demographic and professional characteristics [29], as well as preliminary quantitative findings. In late January 2022, purposive sampling was employed to recruit participants from the previously surveyed population across four hospitals, including both general and specialized tertiary teaching hospitals, to capture diverse organizational contexts. To enhance variability, one participating hospital engaged in international collaboration and held Magnet recognition, contributing additional diversity to organizational culture and professional development environments. Each site included the nurse education department manager and two CNEs, nominated for their active involvement in clinical education.

2.4.2. Sample size

Focus groups continued until both thematic and meaning saturation were reached, defined as the point at which no new categories emerged across successive groups [35]. An additional focus group was conducted to confirm the stability and completeness of the findings.

2.4.3. Data collection

Semi-structured focus group interviews were conducted to explain the quantitative findings, particularly discrepancies between CNEs and their managers, and to examine the processes of role negotiation and interaction. The interview guide was theoretically informed and addressed professionalism domains, as well as adaptive processes such as role transition, leadership development, and balancing clinical and educational responsibilities (see Appendix A). Interviews were conducted both face-to-face and via secure online platforms.

2.4.4. Data analysis

Interviews were transcribed verbatim and managed using the iFlyTek platform (a professional system for audio storage). Transcripts were returned to participants for member checking to enhance credibility. A hybrid content analysis approach was applied [36] (see Fig. 1), combining deductive coding based on the nine professionalism domains and the three core adaptive leadership processes of individual internalization, relational recognition, and collective endorsement, with inductive coding to capture emergent patterns not predefined in the frameworks. Analysis was iterative, involving continuous comparison, refinement, and team validation.

2.5. Integration of quantitative and qualitative data

Integration was achieved through a structured, theory-driven approach using triangulation and construct synthesis [31,32]. A predefined matrix aligned professionalism domains with adaptive leadership processes, serving as a unifying framework across all analytic stages (see Fig. 1). This matrix functioned as an analytic scaffold, ensuring coherence across data collection, analysis, and interpretation.

Quantitative findings provided a structured assessment of professionalism across domains, identifying patterns, variations, and potential predictors. Qualitative findings extended these results by elucidating the adaptive processes through which CNEs interpreted, negotiated, and enacted professionalism within complex clinical-educational contexts. Integration was operationalized through joint displays and embedding strategies, enabling the iterative comparison of quantitative trends with

qualitative narratives [29]. This process facilitated the development of meta-inferences that linked observable behavioral indicators with underlying adaptive mechanisms and contextual influences. Methodological and theoretical triangulation enhanced the credibility and robustness of the findings by converging evidence across data sources, methods, and conceptual lenses [31,32].

2.6. Ethical considerations

The study protocol received ethical approval from the university's ethical committee (Approval number: SJUPU-202130). Before participating, all participants were provided with detailed information about the research and required to provide written consent digitally before completing the survey.

3. Results

3.1. Quantitative results

3.1.1. Participant characteristics

A total of 669 CNEs and CNE managers were included in the quantitative analysis, as detailed in Appendix B. The mean age of participants was 34.24 years ($SD = 5.28$), and the mean duration since certification as a CNE was 6.96 years ($SD = 6.31$). Most participants were over 25 years old (96.5 %), female (97.6 %), and had attained at least a university-level education (96.7 %). Most participants also reported more than 5 years of professional experience in CNE roles.

3.1.2. Results of BIPN score

The total BIPN score for CNEs was 11.00 (8.50, 14.00), while for CNE managers, it was 15.00 (9.25, 19.50), with a statistically significant difference between the groups ($Z = -4.110$, $P < 0.001$. No significant differences were observed in the domains of adherence to the code for nurses ($P = 0.206$), theory (development, use, and evaluation) ($P = 0.126$), and publication and communication ($P = 0.111$). Significant differences were found in the remaining six aspects of professionalism ($P < 0.05$) (see Table 1).

3.2. Qualitative results

Four focus groups ($n = 12$) were conducted across four hospitals, including four CNE managers (deputy chief level) and eight intermediate-level CNE nurses (see Appendix C). Three overarching themes emerged: 1) adaptive alignment with institutional priorities; 2) driving change within complexity; and 3) contributing to social and professional impact. These themes collectively illuminate how adaptive leadership processes underpin the development and enactment of professionalism among CNEs.

3.2.1. Theme 1: adaptive alignment with institutional priorities

3.2.1.1. Academic pursuit and self-improvement. CNEs were selected from highly committed, professionally motivated individuals who demonstrated exceptional performance. Quantitative data showed that 96.7 % of participants held a university-level education, supporting the role of a university as a minimum qualification alongside the University Teacher Qualification Certificate. However, managers expressed a clear preference for postgraduate education to strengthen research capacity, innovation, and leadership. Participants consistently viewed advanced education as critical to professional effectiveness and career progression. CNE narratives indicate that academic advancement was embedded in the realities of adaptive work, where development was constrained by time, workload, and limited recognition of intellectual contributions. These accounts suggested that self-improvement extended beyond institutional compliance, emerging instead as a response to maintaining professional legitimacy within complex practice contexts.

> *"The educational level of CNEs directly influences their ability to innovate in teaching by integrating scientific research with instructional practices to improve processes and introduce new methods. (…) Advanced education also enhances professional responsibility and teaching quality, helping CNEs to fulfill their roles and set a good example for students."* (C1)

> *"Promotions and further study are real considerations. (…), You need to keep up with your role, as it's a practical reality. On the other hand, developing each teaching project takes a long time. (…) Many of these initiatives don't exist in other hospitals-I was often among the first to implement them. Sometimes visiting nurses adapt our work and present it as their own, making it difficult for me to let go of my contributions. I've realized I need to document and consolidate my work more systematically and scientifically."* (C5)

3.2.1.2. Integrating ethical frameworks for nurses and educators. Although CNEs scored relatively low on adherence to the nursing code of ethics, qualitative findings indicated strong integration of ethical principles in practice. Participants identified the nursing code of ethics as a foundational guide for both clinical and educational responsibilities. In China, CNE selection includes rigorous moral evaluation, reinforcing ethical accountability. Context-sensitive decision-making and role modeling were central to professional practice.

> *"… These principles can be applied in both everyday life and teaching. They reflect whether educators are fully using their professional resources to understand their students, especially when dealing with sensitive issues. (…) When conflicts arise between nursing students and patients, I emphasize critical thinking and often point to communication gaps as the root cause. CNEs need to understand the full context and the underlying reasons behind these situations."* (C8)

> *"A CNE should inspire students to develop a genuine passion for nursing. This requires comprehensive knowledge and skills, adherence to standards, advanced expertise, consistent professionalism, and strong interpersonal and communication abilities. CNEs must also demonstrate a genuine commitment to patient care, professional identity, and a sense of achievement. By sharing these positive values and experiences, they can effectively motivate students. Upholding high standards and serving as role models is therefore a fundamental responsibility of CNEs."* (C7)

3.2.1.3. Mastery of educational design and delivery. Educational competence ranked second among the nine professional behaviors, reflecting strong preparation and a strong interest in teaching. However, participants described the transition into educational roles as a period of stress and adjustment. Through experiential learning and reflective practice, CNEs developed individualized teaching approaches, strengthened clinical expertise, and refined their professional philosophies. Managers were responsible for curriculum design and program alignment with institutional goals, while CNEs maintained autonomy in teaching delivery, student engagement, and assessment. Further tailored implementation, particularly through case-based and simulation-based methods, was evident. CNE roles require strong leadership, with clear responsibility for integrating clinical practice, education, and research.

Table 1
Results of the integrative synthesis interpreting adaptive leadership in advancing professionalism among clinical nurse educators ($n = 669$).

Behavioral category	CNEs ($n = 612$)	CNE managers ($n = 57$)	Z	P	Qualitative validation and extension	Integrated synthesis	Adaptive leadership themes
Education preparation	1.00 (1.00, 1.00)	1.00 (1.00, 1.00)	−4.006	<0.001	Academic pursuit and self-improvement	CNEs actively pursue higher education and align personal development with institutional teaching goals. CNE managers emphasized that higher education equips CNEs with the knowledge and skills to innovate teaching, integrate research, and advance institutional educational goals.	Institutional engagement: adaptive alignment with institutional priorities
Adherence to code for nurses	0 (0, 0)	0 (0, 3.00)	−1.265	0.206	Integrating ethical frameworks for nurses and educators	CNEs navigate ethical issues through practical application of core values and model professionalism in daily practice.	
Continuing education competencies	2.50 (2.00, 3.00)	3.00 (2.50, 3.00)	−3.568	<0.001	Mastery of educational design and delivery	CNEs strengthen learning outcomes through curriculum innovation, mentorship, and competency-based teaching.	
Self-regulation and autonomy	1.50 (1.00, 1.50)	1.50 (1.25, 1.50)	−3.253	0.001	Proactive learning and reflective practice	CNEs exercise autonomy to drive change within complex clinical and educational environments, balancing compliance with innovation	Organizational navigation: driving change within complexity
Theory: development, use, evaluation	3.00 (2.50, 3.00)	3.00 (3.00, 3.00)	−1.528	0.126	Application of pedagogical theories to practice	CNEs apply educational and nursing theories to guide instruction, decision-making, and evidence-based teaching and practice.	
Research: development, use, and evaluation	0.50 (0, 1.50)	1.00 (0.50, 3.00)	−3.554	<0.001	Centering clinical education practice to enhance research capacities	CNEs promote research engagement by mentoring students and integrating inquiry into practice. CNEs managers emphasized that this strengthens the research culture and professional competence within clinical units.	
Publication and communication	1.00 (0, 1.50)	1.00 (0.50, 2.00)	−1.595	0.111	Publishing and knowledge dissemination	CNEs actively disseminate knowledge to peers and students by conference, workshops, and internal forums.	Community contribution: contributing to social and professional impact
Professional organization participation	0 (0, 1.00)	1.00 (0, 2.00)	−2.754	0.006	Engaging as leaders and advocates in professional bodies	CNEs navigate organizational structures, influence policy, and advocate for professional standards.	
Community service orientation	0 (0, 2.50)	2.50 (0, 3.00)	−4.976	<0.001	Extending educational and health outreach to communities	CNEs extend clinical education beyond hospital settings, promoting health literacy and community engagement as part of professional and social responsibility	
Total score	11.00 (8.50, 14.00)	15.00 (9.25, 19.50)	−4.110	<0.001			

Note: Data are *Median* (P_{25}, P_{75}). CNE = Clinical Nurse Educator.

"CNEs design the ward's teaching curriculum and set annual goals. They plan, delegate, and supervise tasks to ensure teaching activities are well integrated and continuously improved." (C4)

"Typically, the education department provides a standard checklist for skills examinations, with students preparing tasks in advance. I redesigned this approach to incorporate case-based scenarios and integrate moral and humanistic elements. By using standardized patients and simulation, I aimed to give students multiple ways to demonstrate their knowledge and skills." (C8)

3.2.2. Theme 2: driving change within complexity

3.2.2.1. Proactive learning and reflective practice. Many institutions implemented transition programs to support CNEs' career development through flexible continuing education. Participants viewed these opportunities as essential for professional growth and long-term career planning. Beyond institutional provision, intrinsic motivation and self-directed learning emerged as key drivers of ongoing development. To foster students' professional identity, CNEs adapted their teaching to incorporate moral and case-based learning approaches. This shift required them to integrate virtue-based education into clinical instruction, prompting active professional development through literature reviews, online learning, and iterative experimentation with context-specific teaching strategies.

"It feels like finding a lighthouse in thick fog-something that provides both practical direction and a sense of reassurance (for us)." (C2)

"If you want students to be dedicated to their work, you have to embody that dedication. As a teacher, your behavior and passion have a profound influence on students; they are shaped over time by your commitment and guidance."(C9)

3.2.2.2. Application of pedagogical theories to practice. The domain of "development, use, and evaluation of theory" received the highest ratings, reflecting engagement with evidence-based and theory-guided practice. Managers emphasized the value of embedding pedagogical theory into career development programs to strengthen expertise and leadership capacities. Understanding theory enabled CNEs to identify learning priorities, align with institutional goals, and position themselves as leaders in clinical education projects.

"For nurses preparing to become CNEs, it is essential to engage deeply with educational theory while continuing to apply it in clinical practice. This provides a solid foundation for fulfilling future teaching responsibilities." (C4)

"*Narrative medicine, viewed from a clinical standpoint, enables us to explore the fundamental essence of phenomena and subsequently incorporate them into the realm of nursing discipline*." (C1)

3.2.2.3. Centering clinical education practice to enhance research capacities. CNEs recognized the importance of nursing research but had limited exposure to it during undergraduate training. Despite this, they actively sought to strengthen research competencies to support evidence-based practice and improve

educational outcomes. Managers noted limited integration of research into clinical education, with a focus on practical operational tasks rather than literature reviews or experimental studies. Student inquiries frequently motivated research questions, highlighting the value of practice-centered investigation.

> *"In nursing research, going just 0.1 cm deeper than others demonstrates capability. Research that contributes to clinical experience is crucial."* (C2).

3.2.3. Theme 3: contributing to social and professional impact

3.2.3.1. Engaging as leaders and advocates in professional bodies. CNEs reported the lowest participation rates in professional organizations among the nine professional behavior traits investigated. This was largely due to stringent entry requirements and limited committee positions within the Chinese Nurses Association (CNA) and provincial nurses associations, which restrict broader involvement. Nevertheless, they contributed as specialists in CNA-authorized training bases and hospital committees, influencing practice standards, safety, and policy implementation.

> *"Many nursing wards in our hospital are affiliated with the CNA, the Shanghai Nurse Association, and universities for specialist nurse training. These organizations significantly influence our educational program plans, necessitating that CNEs develop both general and tailored plans for each organizational level."* (C7).

3.2.3.2. Extending educational and health outreach to communities. CNEs scored low in the domain related to community governance and policy advocacy. However, qualitative findings indicated their active engagement in community-based health promotion across non-profit organizations, schools, and local districts. This reflects a misalignment between the assessment construct and actual practice in China, where engagement emphasizes health education, public outreach, and voluntary service rather than policy participation. In these initiatives, CNEs served as coordinators and educators, applying clinical expertise to address diverse public health needs. Supported by institutional structures, their contributions enhanced community health literacy and strengthened the public visibility and credibility of nursing.

> *"We encourage CNEs and other nurses to devote themselves to public community services as volunteers, emulating the devotion and altruism of Florence Nightingale. These efforts should cover local primary schools, companies, and residential communities, focusing on areas such as basic life support, children's accident injuries, and more."* (C7)

> *"Participating in these activities allows me to give something back, and it reinforces the importance of professionalism, patience, and commitment to education."* (C9)

3.2.3.3. Publishing and knowledge dissemination. CNE-led projects provided the basis for most publications, but recognition was often limited by authorship conventions that prioritize first or corresponding authors, restricting academic acknowledgment and performance evaluation. CNE managers, many with postgraduate degrees and some serving as university-appointed master's supervisors, recognized these structural challenges. Most CNEs lacked formal training in research methods and academic writing, a limitation compounded by concurrent clinical and educational responsibilities. To promote research engagement, institutions incorporated indicators such as project participation, grant acquisition, and conference presentations into performance appraisals. While formal publication requirements were not imposed, CNEs were encouraged to share practice-based evidence and educational innovations through conferences, workshops, and internal forums, fostering a research-oriented culture.

> *"Publication is not an easy task. Unlike clinical work, where results are more visible, the impact of educational improvements takes longer to emerge. Still, I believe there's potential to build a more structured approach to educational research and publishing."*(C5)

> *"Last year, we designed a program focused on hands-on research skills. Participants drafted papers, received feedback from their supervisors, and revised their work. We didn't require a final product; the goal was to guide their thinking and build a foundation. Once they understand the methodology, they naturally begin applying it to their teaching projects. As their skills mature, educational research becomes easier."*(C4)

3.3. Research findings of the mixed-methods study

Guided by Fig. 1 and summarized in Table 1, the findings indicate that CNEs operate across institutional engagement, organizational navigation, and community contribution, demonstrating a multidimensional form of adaptive leadership. At the institutional level, CNEs balanced clinical and educational responsibilities while enacting both leadership and followership roles. They strategically managed resources, aligned activities with nurse managers' expectations, and pursued continuing education and professional development (e.g., academic preparation, adherence to codes, continuing education competencies). This adaptive approach fostered interdisciplinary collaboration, supported complex learning processes, and strengthened institutional capacity by aligning personal and organizational goals. Within the organizational context, CNEs demonstrated reflective practice, autonomy, and proactive leadership to navigate the complexities of clinical, educational, and policy domains. They applied pedagogical and research theories, facilitated self-directed learning, and mentored staff in clinical and research competencies (e.g., self-regulation, theory development, research engagement), enhancing the adaptive capacity of the nursing workforce and promoting effective responses to evolving organizational challenges. At the professional and community levels, CNEs extended their influence beyond institutional boundaries through advocacy, participation in professional organizations, community service, and scholarly dissemination. These activities advanced professional standards, promoted interprofessional collaboration, and contributed to societal understanding of nursing. Overall, CNEs exemplify an integrated model of adaptive leadership that combines education, clinical practice, organizational strategy, and community engagement. By bridging institutional, organizational, and societal levels, their leadership fosters institutional resilience, advances nursing education, and strengthens the profession's broader social and professional impact.

4. Discussion

This study extends current understanding of CNEs by demonstrating that leadership is enacted as a dynamic, relational, and practice-based process and by explicitly linking this process to professionalism development. Consistent with international research on healthcare leadership, the findings support the view that leadership in clinical education is not confined to formal managerial roles but is embedded in everyday clinical and educational practice [14,37]. Importantly, this study moves beyond descriptive accounts by identifying adaptive leadership as a key mechanism through which professionalism is developed, enacted, and sustained. Within the nine domains of professionalism, adaptive leadership enables CNEs to interpret complex role

expectations, respond to uncertainty, and align professional values with practice. The relatively lower professionalism scores observed among CNEs, compared with nurse managers and clinical practitioners [2,38], highlight gaps in role preparedness but also underscore the importance of developing adaptive capacity as a core dimension of professionalism. These findings contribute to the theoretical integration of professionalism and adaptive leadership by positioning leadership as an intrinsic, practice-based component of professional formation.

A key contextual contribution of this study is to elucidate how adaptive leadership operates within the distinctive configuration of CNE roles in China. Unlike contexts where CNEs may hold formal educational or supervisory positions, Chinese CNEs typically function within a clinical-dominant, practice-embedded model [19]. In this setting, educational responsibilities are integrated into routine clinical work, requiring CNEs to simultaneously deliver care, facilitate learning, and support professional development. This "embedded educator" model amplifies the need for adaptive leadership, as professionalism must be enacted in real time under competing clinical and educational demands. Without formal authority, CNEs rely on influence, relational engagement, and experiential knowledge to guide learners and shape professional norms [14]. Within this context, adaptive leadership becomes particularly salient, enabling CNEs to mobilize learning, negotiate boundaries, and sustain professional standards amid competing demands [26]. These findings highlight that professionalism is not only a normative expectation but also a situated practice continuously produced through adaptive interactions in clinical settings.

This study further conceptualizes the development of professionalism among CNEs as an adaptive process from institutional alignment to adaptive integration and, ultimately, to professional influence. In the early stages, CNEs tend to align closely with organizational expectations, focusing on role acquisition and compliance as they transition from clinical practitioners to educators. This phase is often characterized by uncertainty, limited pedagogical confidence, and reliance on externally defined standards [14]. As experience accumulates, CNEs enter a phase of adaptive integration, in which they begin to internalize professional values, reconcile dual-qualified expectations, and exercise increasing autonomy [39,40]. This stage reflects key adaptive leadership processes, including sense-making, relational negotiation, and iterative learning within complex environments [39]. In the advanced stage, CNEs develop professional influence, extending their impact beyond immediate teaching responsibilities to shape clinical learning cultures, mentor peers, and contribute to institutional development [41]. This staged progression illustrates that professionalism develops through iterative cycles of adaptation, rather than through linear competency acquisition, and that adaptive leadership serves as the underlying driver across all phases.

Despite these developmental processes, the findings also highlight persistent structural and developmental challenges that constrain the full enactment of professionalism. In particular, the coexistence of clinical, educational, research, and administrative responsibilities generates significant role strain, limiting opportunities for reflective practice and professional growth [42]. These challenges are further reflected in areas such as publication, scholarly communication, and community engagement, where many CNEs report insufficient preparation and limited institutional support. Such constraints not only hinder academic development but also limit the broader social contribution of CNEs as knowledge producers and professional leaders [43]. From an adaptive leadership perspective, these challenges represent systemic rather than purely individual issues, requiring coordinated responses at the organizational and policy levels [39,44]. Addressing these barriers requires not only skill development but also structural conditions that enable adaptive work, such as protected time, access to mentorship, and supportive learning environments.

4.1. Limitations

This study has several limitations. The use of convenience sampling among hospital-affiliated CNEs may limit generalizability, particularly given variations in role expectations in the absence of a unified national accreditation system. To address this, participants were selected according to clear eligibility criteria, focusing on registered nurses and educators holding University Teacher Qualification Certificates, thereby enhancing the study's rigor. Additionally, nurses from multiple provinces across China participated, with satisfactory response rates, providing a reasonably representative sample of CNEs. While perceptions of professionalism may vary geographically, this diversity offers valuable insights into how professionalism varies across contexts. Additionally, the sample consisted predominantly of women, reflecting the nursing workforce's demographic characteristics. This may have influenced participants' understanding and interpretation of adaptive leadership from a gender-sensitive perspective. Given the current demographic profile of the CNE population, future studies should further refine and examine gender-related aspects of leadership perceptions. Although the qualitative sample size was appropriate for purposive sampling across both a general comprehensive hospital and a specialist hospital, the findings were largely based on shared patterns across these settings. An additional general hospital group interview was included to ensure data saturation. However, as all participating hospitals were located in economically and educationally developed eastern provinces of China, validation of the findings in other regions is warranted. Furthermore, while the mixed-methods design strengthens the study, the reliance on self-reported data and the cross-sectional design limit causal inference. Longitudinal research is needed to capture the dynamic evolution of professionalism and adaptive leadership.

4.2. Implications

This study underscores that strengthening professionalism among CNEs requires the deliberate development of adaptive leadership capacity. As professionalism is enacted through context-responsive practice, institutional strategies should move beyond competency training to support adaptive processes. A key implication is the establishment of structured mentorship programs that explicitly incorporate adaptive leadership development. Such programs can support newly appointed CNEs in navigating role transitions, managing ambiguity, and aligning professional values with practice. Additionally, organizational support mechanisms are essential to sustain adaptive professionalism. Providing protected time for academic responsibilities, including teaching preparation, curriculum development, and scholarly activity, is critical to reducing role strain and enabling reflective practice. Flexible workload arrangements, such as adjusting clinical duties during intensive teaching or research periods, can further facilitate the integration of clinical and educational roles.

Strengthening research capacity represents another priority. Targeted institutional investment in research training, academic writing support, and collaborative platforms can enhance CNEs' capacity to generate knowledge and deliver evidence-based education. Participation in academic-clinical partnerships and professional learning communities may further promote collective

learning and innovation, reinforcing the relational dimensions of adaptive leadership. At the policy level, the development of standardized competency frameworks should incorporate adaptive capabilities alongside technical and pedagogical skills. Clear career pathways and recognition systems are also needed to support sustained professional development and role legitimacy across institutions. Finally, future research should examine the mechanisms by which adaptive leadership influences downstream outcomes, including student competence, professional identity formation, and workforce retention, to better capture the broader impact of CNE professionalism within healthcare systems.

5. Conclusions

This study advances the understanding of nursing professionalism by empirically linking it to adaptive leadership within the context of CNE role development. The findings position professionalism not as a static set of attributes but as a dynamic, adaptive process shaped through role transition, relational engagement, and contextual complexity. By highlighting the developmental trajectory and contextual embeddedness of CNE leadership, this study underscores the importance of fostering adaptive capacity alongside technical and educational competencies. Strengthening institutional support, policy frameworks, and professional development pathways will be essential to enabling CNEs to fulfill their multifaceted roles and advance nursing education and practice.

Data availability statement

The datasets generated during the current study are available from the corresponding author upon reasonable request.

CRediT authorship contribution statement

Xiyi Wang: Conceptualization, Methodology, Formal analysis, Data curation, Writing – original draft, Writing – review & editing, Funding acquisition. **Nianqi Cui:** Investigation, Data curation, Formal analysis, Writing – review & editing. **Fule Wen:** Validation, Resources, Writing – review & editing. **Lili Wu:** Investigation, Data curation, Writing – review & editing. **Yunhua Jia:** Investigation, Data curation, Writing – review & editing. **Xiaoyin Niu:** Validation, Project administration, Writing – review & editing. **Shu Xu:** Conceptualization, Methodology, Validation, Writing – review & editing. **Geraldine Lee:** Conceptualization, Methodology, Writing – review & editing. **Yun Hu:** Conceptualization, Methodology, Validation, Writing – review & editing, Supervision, Project administration.

Funding

This study was supported by the Shanghai Municipal Education Commission Young Teacher Cultivation Program. The funding body had no role in the study design, data collection, analysis, or interpretation.

Declaration of competing interest

The authors have declared no conflict of interest.

Acknowledgments

We would like to thank all the participants involved in this study, as well as the hospitals for their generous support. The authors also acknowledge the support of the Shanghai Association of Higher Education (Grant No. 1QZD2409), the Shanghai Jiao Tong University School of Medicine Nursing Development Program (Grant No. SJTUHLXK2024), and Shanghai Jiao Tong University-Yonsei University Joint Nursing Fund for their support of the study procedures.

Appendices. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.ijnss.2026.04.017.

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