

## The Effect of Head Nurse Leadership Behavior on Nurse Turnover Intention Mediated by Professional Identity: Postprint

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### Abstract

**Abstract:** Objective: To investigate the influence of head nurse leadership behavior on nurses' turnover intention, with professional identity as a mediator. Methods: Using convenience sampling method, 132 clinical nurses from a tertiary Grade A hospital in Xi'an were selected as research subjects, and a questionnaire survey was conducted using the General Information Questionnaire, Hospital Leadership Behavior Assessment Scale, Professional Identity Assessment Scale, and Turnover Intention Scale. Results: The head nurse leadership behavior score was  $(81.41 \pm 10.08)$  points, *professional identity was the most common*  $(49.19 \pm 13.86)$  points, and the total mean score of turnover intention was  $(2.28 \pm 0.28)$  points; head nurse leadership behavior was positively correlated with professional identity ( $r=0.546$ ,  $P<0.01$ ), negatively correlated with turnover intention ( $r=-0.468$ ,  $P<0.01$ ), and professional identity was negatively correlated with turnover intention ( $r=-0.522$ ,  $P<0.01$ ); professional identity played a partial mediating role in the relationship between head nurse leadership behavior and turnover intention, with the mediating effect accounting for 44.68% of the total effect. Conclusion: Head nurse leadership behavior indirectly influences nurses' turnover intention through professional identity as a mediator. Hospital administrators should prioritize improving head nurse leadership behavior to enhance nurses' sense of professional identity, which may help reduce nurses' turnover intention and stabilize the nursing workforce.

### Full Text

### Preamble

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## The Influence of Head Nurse Leadership Behavior on Nurses' Turnover Intention with Professional Identity as a Mediator

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### Abstract

**Objective:** To explore the influence of head nurses' leadership behavior on nurses' turnover intention with professional identity as a mediator.

**Methods:** Using convenience sampling, 132 clinical nurses from a tertiary hospital in Xi' an were selected as study subjects. Questionnaires were administered including a general information survey, the Hospital Leadership Behavior Assessment Scale, the Professional Identity Scale, and the Turnover Intention Questionnaire.

**Results:** Head nurse leadership behavior scored  $(81.41 \pm 10.08)$  points, with the pm leadership type being most common. Head nurse leadership behavior was positively correlated with professional identity ( $r=0.546$ ,  $P<0.01$ ) and negatively correlated with turnover intention ( $r=-0.468$ ,  $P<0.01$ ). Professional identity was negatively correlated with turnover intention ( $r=-0.522$ ,  $P<0.01$ ). Professional identity played a partial mediating role in the relationship between head nurse leadership behavior and turnover intention, with the mediating effect accounting for 44.68% of the total effect.

**Conclusion:** Head nurse leadership behavior indirectly influences nurses' turnover intention through professional identity. Hospital administrators should prioritize improving head nurse leadership behavior to enhance nurses' professional identity, thereby reducing turnover intention and stabilizing the nursing workforce.

**Keywords:** head nurse leadership behavior; professional identity; turnover intention; nursing management

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### Introduction

Nurse turnover represents a significant challenge for healthcare systems. Statistics indicate that in 2017, the nurse turnover rate in China was 2.15%, with 3.09% of hospitals experiencing rates exceeding 10% [1]. Turnover intention serves as a reliable predictor of actual turnover behavior [2] and adversely affects both clinical nursing quality and nurses' quality of life [3]. Professional identity—defined as nurses' self-affirmation of their nursing career—constitutes

a crucial factor influencing turnover intention [4]. Head nurse leadership behavior refers to the leadership styles and approaches exhibited by head nurses in their leadership practice [5]. Multiple correlational studies have demonstrated that improved head nurse leadership behavior enhances nurses' perception of their work environment [6], increases job satisfaction [7], and strengthens cohesion among nursing staff [5]. Effective head nurse leadership is considered central to improving and reducing nurse turnover rates [8]; however, research examining the specific mechanisms through which head nurse leadership behavior influences turnover intention remains scarce. Grounded in PM theory, this study analyzes the mediating role of professional identity in the relationship between head nurse leadership behavior and nurses' turnover intention, providing evidence to reduce turnover intention and stabilize the nursing workforce.

## Materials and Methods

### Study Design and Participants

Using convenience sampling, clinical nurses from a tertiary hospital in Xi' an were selected as study subjects. **Inclusion criteria** were: (1) possession of a valid nursing license; (2) direct supervision by the same head nurse for more than one year; and (3) willingness to participate in the survey. **Exclusion criteria** included: (1) nursing managers; and (2) trainee nurses and nursing students.

### Measurement Instruments

**General Information Questionnaire:** This included demographic variables such as gender, age, professional title, education level, department, years of service, employment type, and marital status.

**Hospital Leadership Behavior Assessment Scale (HLBAS):** This scale was translated and revised by Xu Liancang et al. in 1991 [9] and demonstrates high reliability (Cronbach' s  $\alpha=0.97$ ) and validity. The scale comprises 20 items across two dimensions: the first 10 items assess Performance (P) function, and the remaining 10 items assess Maintenance (M) function. Using a 5-point Likert scale, the total score ranges from 0-100 points. Based on comparisons between P and M function scores and the overall mean, four leadership behavior types are identified: PM type (high performance, high maintenance), pM type (low performance, high maintenance), Pm type (high performance, low maintenance), and pm type (low performance, low maintenance). Head nurse leadership behavior scores represent the average ratings from nurses in their respective departments, with higher scores indicating better leadership behavior.

**Professional Identity Scale:** Developed by Liu Ling [10], this scale comprises 30 items across five dimensions: occupational cognitive evaluation, occupational social skills, occupational social support, occupational frustration coping, and occupational self-reflection. Using a 5-point Likert scale with all positively-worded items, total scores range from 30-150 points, with 121-150 indicating

high professional identity, 91-120 moderate, 61-90 low, and 30-60 very low. Dimension scores are calculated as the total dimension score divided by the number of items, with higher scores reflecting higher levels of professional identity in that dimension. The scale demonstrates excellent reliability (Cronbach's  $\alpha=0.938$ ) and split-half reliability (0.880).

**Turnover Intention Questionnaire (TIQ):** Originally developed by Spector and Michael and later translated and revised by Taiwanese scholar Li Dongrong et al. [11], this scale contains 6 items using a 4-point Likert scale with reverse scoring for all items. Total scores range from 6-24 points, with a mean score of 1 indicating very low turnover intention, >1-2 low, >2-3 high, and >3 very high. The questionnaire includes three dimensions: turnover intention I, turnover intention II, and turnover intention III. The scale demonstrates acceptable reliability (Cronbach's  $\alpha=0.77$ ) and content validity (0.68).

### Data Collection

Data were collected through an online survey using “Wenjuanxing” (a Chinese survey platform). The questionnaire header included instructions explaining the study's purpose and significance, with clear directions for completion. Head nurses organized eligible clinical nurses to complete the anonymous questionnaire after obtaining informed consent. The electronic survey was restricted to one submission per WeChat account. A total of 132 electronic questionnaires were submitted within the specified timeframe. After excluding questionnaires with completion times <200 seconds or identical responses across all items, 124 valid questionnaires remained, yielding a response rate of 93.94%.

### Statistical Analysis

Data were analyzed using SPSS 20.0 software. Descriptive statistics included means  $\pm$  standard deviations ( $\bar{x}\pm s$ ), frequencies, and percentages. Pearson correlation analysis and regression analysis were used for statistical inference. The Bootstrap method was employed to test mediating effects. The significance level was set at  $\alpha=0.05$ , with  $P<0.05$  considered statistically significant.

## Results

### Participant Characteristics

The final sample comprised 124 nurses, including 122 females and 2 males. Age distribution was: 20-24 years (22 nurses), 25-29 years (53), 30-34 years (32), and >35 years (17). Education levels included: junior college (34) and bachelor's degree (90). Professional titles were: nurse (48), nurse practitioner (63), and senior nurse or above (13). Years of service: 1-3 years (45), 4-10 years (58), and >10 years (21). Employment type: permanent staff (4) and contract (120). Marital status: married (63), unmarried (60), and divorced (1).

### Head Nurse Leadership Behavior

Head nurse leadership behavior total scores were  $(81.41 \pm 10.08)$  points, with *P* function at  $(41.35 \pm 4.85)$  points and *P* points. Leadership type distribution was: PM type 35 nurses (28.23%), Pm type 16 (12.90%), pM type 12 (9.68%), and pm type 61 (49.19%).

### Professional Identity Status

Professional identity levels were: low (21 nurses, 16.94%), moderate (88, 70.97%), and high (15, 12.10%). Total and dimension scores for professional identity are presented in Table 1 .

**Table 1** Professional Identity Total and Dimension Scores ( $x \pm s$ )

Dimension	Score
Occupational Cognitive Evaluation	(value)
Occupational Social Skills	(value)
Occupational Social Support	(value)
Occupational Frustration Coping	(value)
Occupational Self-Reflection	(value)
Professional Identity Total Score	$(104.76 \pm 13.86)$

### Turnover Intention Status

Turnover intention levels were: very low (7 nurses, 5.65%), low (42, 33.87%), high (64, 51.61%), and very high (11, 8.87%). Total and dimension scores for turnover intention are presented in Table 2 .

**Table 2** Turnover Intention Total and Dimension Scores ( $x \pm s$ )

Dimension	Score
Turnover Intention I	(value)
Turnover Intention II	(value)
Turnover Intention III	(value)
Turnover Intention Total Score	$(2.28 \pm 0.68)$

### Correlation Analysis

Pearson correlation analysis revealed that head nurse leadership behavior was positively correlated with professional identity ( $r=0.546$ ,  $P<0.01$ ) and negatively correlated with turnover intention ( $r=-0.468$ ,  $P<0.01$ ). Professional identity was negatively correlated with turnover intention ( $r=-0.522$ ,  $P<0.01$ ). Detailed results are presented in Table 3 .

**Table 3** Correlations Among Head Nurse Leadership Behavior, Professional Identity, and Turnover Intention (*r* values)

Variable	1	2	3
1. Head Nurse Leadership Behavior	1		
2. Professional Identity	0.546**	1	
3. Turnover Intention	-0.468**	-0.522**	1

Note: \*\*P<0.01

### Mediating Effect Analysis

To analyze the mechanism through which head nurse leadership behavior influences turnover intention with professional identity as a mediator, hierarchical regression was conducted. Three equations were established: Equation 1 showed that head nurse leadership behavior predicted turnover intention; Equation 2 demonstrated that head nurse leadership behavior significantly predicted professional identity; Equation 3 revealed that after controlling for head nurse leadership behavior and adding the mediator (professional identity) to the regression model, the adjusted R<sup>2</sup> increased from 21.90% to 32.00%, and the regression coefficient for head nurse leadership behavior decreased from -0.468 to -0.261 (both P<0.001). Results are presented in Table 4 .

**Table 4** Mediating Role of Professional Identity Between Leadership Behavior and Turnover Intention

Model	Predictor	Outcome	Adjusted R <sup>2</sup>	$\beta$
Equation 1	Leadership Behavior	Turnover Intention	0.219	-
Equation 2	Leadership Behavior	Professional Identity	0.298	0.546***
Equation 3	Leadership Behavior + Professional Identity	Turnover Intention	0.320	-
				0.261***

Note: \*\*\*P<0.001

Bootstrap mediation testing (95% confidence interval) yielded results (LLCI=-0.143, ULCI=-0.039) that did not contain zero, indicating a significant mediating effect. The mediating effect was -0.084, accounting for 44.68% of the total effect. Detailed results are presented in Table 5 .

**Table 5** Bootstrap Test of Professional Identity Mediating Effect

Effect	Boot SE	Boot LLCI	Boot ULCI
Indirect Effect	(value)	-0.143	-0.039

## Discussion

### Head Nurse Leadership Behavior Requires Improvement

Head nurse leadership behavior encompasses two functions: Performance (P) and Maintenance (M). The P function refers to achieving organizational goals, emphasizing external management of subordinates, and primarily measures the leader's planning ability and capacity to manage subordinates according to plans and regulations. The M function involves maintaining and strengthening intra-group relationships, emphasizing empowerment and encouragement, and assesses the leader's organizational and coordination abilities [12]. In this study, P function scores ( $41.35 \pm 4.85$ ) were slightly higher than M function scores ( $40.06 \pm 5.92$ ), indicating that head nurses prioritize goal achievement over team maintenance, consistent with findings from Ma Gairong et al.'s survey of 362 nurses in three tertiary hospitals in Xi'an [13]. The pm leadership type was most prevalent (49.19%), while the ideal PM type accounted for only 28.23%—lower than reported in related studies [13-14]. These findings suggest that head nurse leadership behavior needs improvement. Although head nurses possess rich clinical experience, they may lack management skills and the ability to coordinate internal relationships. Therefore, administrators should prioritize leadership development for head nurses to facilitate transformation toward the PM leadership type, thereby enhancing nurses' work enthusiasm and initiative and improving overall nursing management.

### Professional Identity at Moderate Level

The results show that professional identity scores were ( $104.76 \pm 13.86$ ) points, indicating a moderate level of professional identity—consistent with previous research [4,15] and suggesting room for improvement. The “occupational social support” dimension scored highest, aligning with Peng Ya et al.'s findings [15], indicating that nurses perceive relatively high levels of trust, respect, and support from leaders, colleagues, patients, and society. The “occupational social skills” dimension scored lowest, consistent with Xu Longhua's research [16], suggesting that communication skills with managers, colleagues, and patients require improvement among nurses in this study.

### High Level of Turnover Intention

The total mean turnover intention score was ( $2.28 \pm 0.68$ ) points, falling within the >2-3 range, indicating relatively high turnover intention among nursing staff. The “turnover intention II” dimension scored highest, consistent with previous

studies [4,17], suggesting greater perceived availability of external job opportunities—likely related to current nursing shortages and increased employment opportunities. However, dimensions measuring likelihood of resigning and motivation to seek other jobs scored lower, possibly because resigning introduces uncertainty and a stable work environment discourages leaving. Nevertheless, the nursing workforce remains unstable, and better opportunities may prompt departures.

### **Negative Correlations Among Variables**

Professional identity was negatively correlated with turnover intention—higher professional identity associated with lower turnover intention—consistent with existing research [4,15]. Furthermore, head nurse leadership behavior was positively correlated with professional identity and negatively correlated with turnover intention, indicating that better leadership behavior enhances professional identity and reduces turnover intention. This suggests that head nurses, as managers who affirm and support nurses' capabilities, can 充分调动护士工作积极性 (fully mobilize nurses' work enthusiasm), positively influencing professional identity. Effective leadership behavior also maintains team relationships, creates a positive and harmonious work atmosphere [18], reduces occupational burnout, and improves retention [19]. Conversely, poor leadership may contribute to nursing staff attrition.

### **Mediating Role of Professional Identity**

Professional identity demonstrated a partial mediating effect between head nurse leadership behavior and turnover intention. While professional identity has been extensively studied as a mediator in relationships between job stress, job satisfaction, and turnover intention [20-21], few studies have examined its mediating role between head nurse leadership behavior and turnover intention. The findings indicate that head nurse leadership behavior directly affects turnover intention while also exerting an indirect effect through professional identity. Leadership behavior directly influences nurses' self-actualization and work attitudes; poor leadership generates negative emotions, reduces professional identity, and increases turnover intention. Conversely, when facing work difficulties, professional identity serves as an intrinsic motivator, connecting individual meaning with the meaning and ultimate value of nursing work, providing stable internal drive to overcome external challenges [21]. Thus, enhancing professional identity can mitigate the impact of leadership behavior on turnover intention.

### **Conclusion**

In summary, head nurse leadership types are concerning, and the high level of turnover intention among nurses warrants attention. Head nurse leadership behavior influences nurses' turnover intention through the mediating role of

professional identity. Therefore, we recommend that hospital administrators regularly conduct nursing management training, emphasizing development of both performance and maintenance functions. By improving head nurse leadership behavior, administrators can enhance nurses' professional identity and reduce turnover intention.

**Conflict of Interest Statement:** The authors declare no conflicts of interest.

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*Note: Figure translations are in progress. See original paper for figures.*

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