

## Original Article

# The effects of colleague solidarity and affective commitment on nurses' intent to stay

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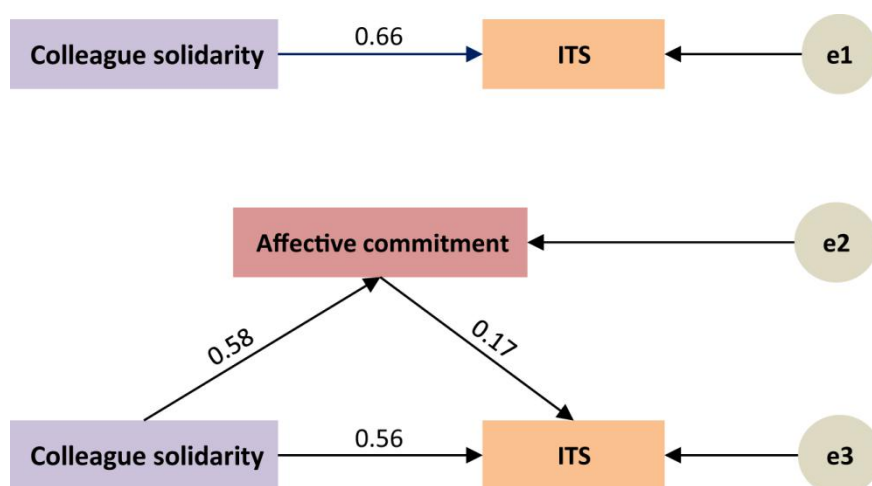
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## Highlights

This paper investigated the status of intent to stay among nurses, and explored the effects of colleague solidarity and affective commitment on nurses' intent to stay and whether affective commitment played a mediating role on the relationship between colleague solidarity and intent to stay?

## Editor's Summary

The nursing shortage is a critical challenge all over the world. It is important to note that this condition has a negative impact on patients' outcomes and quality of nursing care. It is thus important to deeply explore the current status and possible factors of intent to stay among nurses. Interestingly, this article addresses this scientific question.



**Citation:** Li H, Pang XL, Xie LT. The effects of colleague solidarity and affective commitment on nurses' intent to stay. TMR Integrative Nursing, 2018, 2(2): 94-101

**DOI:** 10.12032/TMRIN20180619

**Submitted:** 24 April 2017, **Accepted:** 2 May 2018, **Online:** 7 May 2018.



## ABSTRACT

**Objective:** The purpose of this paper was to determine the effects of colleague solidarity and affective commitment on intent to stay among nurses, and to provide the basis for developing more effective retention strategies. **Methods:** A cross-sectional survey was carried out and a sample of 346 registered nurses was recruited in convenience sampling method from three tertiary hospitals in Tianjin, China. A self-administrative questionnaire was used in order to collect data. All analyses were performed using SPSS 17.0 software. **Results:** The mean scores for colleague solidarity, affective commitment and intent to stay of nurses were  $3.61 \pm 0.50$ ,  $3.26 \pm 0.55$ , and  $3.54 \pm 0.67$ , respectively. The nurses' colleague solidarity and each dimension, affective commitment and intent to stay showed a positive correlation ( $r = 0.141 - 0.709$ ,  $P < 0.01$ ). Multiple linear regression analysis showed that emotional solidarity, academic solidarity and affective commitment entered intent to stay regression equation ( $\beta = 0.170 - 0.437$ ,  $P < 0.001$ ) and explained 45.3% of the total variation in nurses' intent to stay, and emotional solidarity became the strongest predictor ( $\beta = 0.437$ ,  $P < 0.001$ ). Hierarchical regression analysis revealed that affective commitment played a partial moderating role on the relationship between colleague solidarity and intent to stay ( $\beta = 0.174 - 0.659$ ,  $P < 0.001$ ). **Conclusion:** Hospital administrators and managers should develop effective strategies to enhance colleague solidarity and affective commitment among nurses, which will ultimately increase nurses' intent to stay.

**Key words:** Clinical nurses, Solidarity, Affective commitment, Intent to stay

## 摘要

**目的:** 探讨同事间团结度、感情承诺对护士留职意愿的影响, 为制定护士保留策略提供依据。

**方法:** 本研究为横断面调查研究。采用方便抽样法, 选取 346 名天津市 3 所三级甲等医院在职护士作为研究对象, 并使用自陈式问卷进行调查。采用 SPSS 17.0 软件进行数据分析。

**结果:** 护士同事间团结度得分为( $3.61 \pm 0.50$ ), 感情承诺得分为( $3.26 \pm 0.55$ ), 留职意愿得分为( $3.54 \pm 0.67$ )。护士同事间团结度及各维度、感情承诺、留职意愿间均呈正相关 ( $r = 0.141 - 0.709$ , 均  $P < 0.01$ ); 多元线性回归分析结果显示情感团结、感情承诺和学术团结进入回归方程 ( $\beta = 0.170 - 0.437$ ,  $P < 0.001$ ), 共解释留职意愿总变异的 45.3%, 其中情感团结为主要预测变量 ( $\beta = 0.437$ ,  $P < 0.001$ )。分层回归分析结果显示感情承诺在护士间团结度和留职意愿间起部分中介作用 ( $\beta = 0.174 - 0.659$ ,  $P < 0.001$ )。

**结论:** 医院和护理管理者应采取有效措施提高护士同事间团结度和感情承诺水平, 促进护士留职意愿的增加。

**关键词:** 护士; 团结度; 感情承诺; 留职意愿

**Abbreviations:** ITS, Intent to stay; CSNS, Colleague solidarity of nurses' scale; SD, Standard difference.

**Competing interests:** The authors declare that there is no conflict of interests regarding the publication of this paper.

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**Executive Editor:** Xu Tian



## 1. Introduction

Currently, the nursing shortage is a critical challenge across the globe that negatively affects patient safety and the quality of nursing care [1]. Thus, China regards increasing the total number of nurses as one of the key development targets in the outline of China's nursing career development program (2016-2020) [2]. High turnover was determined to be a major contributor related to the shortage of nurses [3]. In mainland China, the turnover rate among nurses in tertiary hospitals was nearly 5.8%, and developed areas was about 8% to 10%, while the remaining areas was as high as 20% [4]. Therefore, how to increase nurses' retention has grown up to be an important topic in nursing management.

Considerable evidence has indicated that the intent to stay is the most crucial predictor of retention behaviour [5]. Intent to stay (ITS) refers to the intention of an employee remaining at their current job without finding other job opportunities [6]. Basing on the theoretical model of clinical nurses' ITS [7], work characteristics were extremely important antecedents of nurses' ITS, and nurses' cognitive and effective responses to their work environment exerted a mediating role on the relationship between them. Affective commitment, referring to employees' emotional attachment to, identification with, and involvement in the organization [8]. Empirical studies have shown that of the three types of organizational commitment, affective commitment has been shown to be most strongly related to ITS [9]. Colleague solidarity, defined as support among colleagues and the sharing of professional knowledge, methods and skills with each other [10], is the quantitative index of interpersonal relationships among colleagues. Studies have suggested that affective commitment improves and intent to leave decreases among nurses when they receive the support of colleague [11, 12].

Since colleague solidarity of nurses' scale (CSNS) was developed by Uslusoy *et al.* in 2013 [10], nurses' colleague solidarity has attracted more and more attention. However, to date, few studies are available regarding the relationships between colleague solidarity, affective commitment and nurses' ITS. Therefore, the purpose of this study was to determine the effects of colleague solidarity and affective commitment on ITS among nurses. The following hypotheses were proposed: colleague solidarity positively influences the nurses' ITS, affective commitment positively influences the nurses' ITS, and affective commitment plays a moderating role on the relationship between colleague solidarity and the ITS. The results will help hospital administrators and managers develop more effective strategies that enhance the ITS among nurses, and which will ultimately promote the stability of the nursing team and optimize the quality of nursing care.

## 2. Methods and materials

### 2.1 Design and sample

This was a cross-sectional survey. A convenient sample of 375 nurses were recruited from three tertiary hospitals in Tianjin, China. Inclusion criterion was that the nurses who had been working at least 1 year at these hospitals. Exclusion criteria included rotary nurses and nurses engaging in advanced studies or employed after retirement. Three trained research assistants helped collect the data. Before the investigation, participants were explained the purpose of the survey and promised that all information in the questionnaire would be held strictly confidential. Self-administered questionnaires were disseminated after the participants signed the informed consent forms. Each participant independently completed the questionnaire and returned it after 1 week. All data were collected during January to February 2018.

### 2.2 Instruments

The questionnaire used in this study was composed of four parts: demographic characteristics of nurses, colleague solidarity of nurses' scale, affective commitment scale and intention to stay scale.

(1) *Demographic characteristics of nurses.* Nurses' demographic characteristics were developed by the researchers based on literature review and clinical experience, including nurses' personal information such as age, gender, marital status, educational background, departments, professional titles, nursing age, employment forms, monthly income, and the motivation to engage in nursing career. These demographic characteristics are potential variables affecting ITS among nurses.

(2) *Colleague solidarity of nurses' scale (CSNS).* This scale was used to measure colleague solidarity among nurses, which was developed by Uslusoy *et al.* in 2013 [10]. We used the Chinese version of the CSNS, translated and adapted by Gao *et al.* in 2014 [13]. The CSNS includes three dimensions comprising 21 items: emotional solidarity (nine items), academic solidarity (seven items) and negative opinions about solidarity (five items). Each item was scored on a five-point Likert scale ranging from 1 (never) - 5 (always). Negative responses were inversely scored. Total scores range between 21 - 105; a higher score indicated a greater solidarity among nurses. The overall Cronbach's alpha of the CSNS was 0.878 in the present study.

(3) *Affective commitment scale.* The affective commitment scale was used to measure nurses' affective commitment to the organization. The Chinese version of this instrument, translated and adapted by Li-Li Liu in 2007 [14], was utilized in our study. This scale is composed of 9 items, which were scored on a five-point Likert scale ranging from 1 (strongly disagree) -5 (strongly agree). The sum of all 9 items yields a global affective commitment score, with a higher score indicated higher affective commitment. The Cronbach's alpha of this scale was 0.832 in our study.

(4) *Intention to stay scale.* This scale, developed by Turnley *et al.* [15], was used to evaluate intent to stay in the current job among nurses. We utilized the Chinese version of the scale, translated and adapted by Tao *et al.* in 2010 [16]. This scale is a single dimension comprising



6 items, which were scored on a five-point Likert scale ranging from 1 (strongly disagree) - 5 (strongly agree). Responses were reverse-scored for second, third and sixth items. A higher score indicated a stronger intent to stay among nurses. The Cronbach's alpha of this scale was 0.768 in this study.

### 2.3 Statistical analysis

Statistical analyses were carried out using SPSS 17.0 software (SPSS Inc., Chicago, IL, USA). Descriptive statistics were used to describe the demographic characteristics and studied variables including frequencies, percentages, means and standard deviations. Independent samples t-test and one-way ANOVA analysis were conducted to determine differences in the level of intent to stay for different demographic characteristics. Using Pearson correlation, researchers identified correlations between dimensions of colleague solidarity, affective commitment and ITS. A stepwise regression model was performed to determine predictors of ITS. The mediating effect of affective commitment in the relationship between colleague solidarity and ITS was evaluated by hierarchical regression analysis. A P-value of less than 0.05 was considered statistically significant.

## 3. Results

### 3.1 The demographic characteristics of nurses

A total of 375 questionnaires were administered, but finally only 346 valid questionnaires were obtained, representing an 92.27% effective response rate. 346

participants were 85.0% female with a mean age of 31.30 years old ( $SD = 7.83$ ). More than half (60.1%) of the participants were married, 63.0% were held a baccalaureate degree and higher, 50.9% were senior nurses, 60.7% were formal establishment, 54.4% worked at medical ward or surgical ward, and 52.6% earned less than 5000 per month. The nursing age ranged from 1 to 31 years with a median duration of 5 years. Most of the participants were engaged in nursing profession due to living needs and others.

### 3.2 Level of colleague solidarity, affective commitment and ITS among nurses

The mean score for colleague solidarity among nurses was ( $3.61 \pm 0.50$ ), and the mean score of the three dimensions ranged from high to low were emotional solidarity ( $3.83 \pm 0.64$ ), negative opinions about solidarity ( $3.62 \pm 0.57$ ) and academic solidarity ( $3.33 \pm 0.61$ ), respectively. The mean score for affective commitment was ( $3.26 \pm 0.55$ ). And the mean score for ITS was ( $3.54 \pm 0.67$ ).

### 3.3 The association between ITS and demographic characteristics among nurse

The differences of nurses' ITS level between the different demographic characteristics were statistically significant ( $P < 0.01$ ). As is shown in Table 1, nurses who reported that they didn't intend to stay with current job were more likely to be male, younger, single, informal establishment and have higher educational background, lower professional titles, shorter nursing age, less monthly income and be engaged in nursing profession not out of passion for nursing.

**Table 1: The association between ITS and demographic characteristics among nurses (n=346)**

Variable	n (%)	score	F/t	P
Gender				
Female	294 (85.0)	$3.60 \pm 0.66$	4.174	<0.001
Male	52 (15.0)	$3.19 \pm 0.62$		
Age (years)				
<30	172 (49.7)	$3.43 \pm 0.70$	4.792	0.009
30~	110 (31.8)	$3.65 \pm 0.60$		
$\geq 40$	64 (18.5)	$3.65 \pm 0.67$		
Marital status				
Married	208 (60.1)	$3.62 \pm 0.68$	2.641	0.009
Unmarried	138 (39.9)	$3.43 \pm 0.65$		
Educational background				
College Diploma	128 (37.0)	$3.68 \pm 0.66$	5.265	<0.001
Baccalaureate degree and above	218 (63.0)	$3.30 \pm 0.63$		
Professional titles				
Nurse	85 (24.6)	$3.36 \pm 0.73$	5.359	0.005
Senior nurse	176 (50.9)	$3.55 \pm 0.64$		
Supervisor nurse	85 (24.6)	$3.70 \pm 0.64$		
Departments				



Medical ward	67 (19.4)	3.35±0.78	12.192	<0.001
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**Table 1: The association between ITS and demographic characteristics among nurses (n=346) (Continued)**

Variable	n (%)	score	F/t	P
Surgical ward	121 (35.0)	3.28±0.49		
Maternity ward	20 (5.8)	3.68±0.70		
Emergency department	75 (21.7)	3.84±0.75		
ICU	42 (12.1)	3.85±0.62		
Operating room	21 (6.1)	3.54±0.67		
Nursing age (years)				
<5	160 (46.2)	3.40±0.69	7.421	0.001
5~	98 (28.3)	3.65±0.63		
≥15	88 (25.4)	3.69±0.64		
Monthly income (yuan)				
<3000	70 (20.2)	3.10±0.62	34.126	<0.001
3000~	112 (32.4)	3.44±0.65		
≥5000	164 (47.4)	3.80±0.58		
Employment forms				
Formal establishment	210 (60.7)	3.63±0.60	2.752	0.006
Informal establishment	136 (39.3)	3.41±0.75		
The motivation to engage in nursing career				
Follow parents' wishes	52 (15.0)	3.26±0.61	8.286	<0.001
Love the nursing career	89 (25.7)	3.65±0.67		
Meet living needs and others	205 (59.2)	3.46±0.67		

### 3.4 Correlation analysis among colleague solidarity, affective commitment and ITS

A significant positive correlation was found between colleague solidarity (three dimensions), affective commitment and ITS ( $r = 0.141 - 0.709$ , all  $P < 0.01$ ) (Table 2).

### 3.5 Multiple linear regression analysis for nurses' ITS

To determine the contribution of colleague solidarity and affective commitment to nurses' ITS, multiple linear

regression analysis was performed with ITS as the dependent variable and three dimensions of colleague solidarity and affective commitment as independent variables. The results showed that emotional solidarity, academic solidarity and affective commitment entered ITS regression equation ( $\beta = 0.170 - 0.437$ ,  $P < 0.001$ ) and explained 45.3% of the total variation in nurses' intent to stay, and emotional solidarity became the strongest predictor ( $\beta = 0.437$ ,  $P < 0.001$ ) (Table 3).

**Table 2: Correlation analysis among colleague solidarity, affective commitment and ITS (r)**

Variable	1	2	3	4	5	6
1. Colleague solidarity	1					
2. Emotional solidarity	0.934*	1				
3. Academic solidarity	0.814*	0.654*	1			
4. Negative opinions about solidarity	0.600*	0.460*	0.198*	1		
5. Affective commitment	0.583*	0.474*	0.709*	0.141*	1	
6. ITS	0.659*	0.629*	0.577*	0.306*	0.499*	1

\* $P < 0.01$

### 3.6 Mediating effect analysis of affective commitment on the relationship between colleague solidarity and ITS

In accordance with the new mediating effect test procedure proposed by Zhong-Lin Wen [17], three

models were constructed to determine the mediating effect of affective commitment. In model 1, colleague solidarity could positively predict ITS among nurses ( $\beta = 0.66$ ,  $P < 0.001$ ). In model 2, colleague solidarity could





positively predict affective commitment among nurses ( $\beta = 0.58$ ,  $P < 0.001$ ). In model 3, both colleague solidarity and affective commitment could positively predict ITS among nurses ( $\beta = 0.56$ ,  $0.17$ , respectively, all  $P < 0.001$ ), and the impact coefficient of colleague solidarity on ITS became smaller when affective

commitment introduced. Hence, affective commitment played a partial moderating role on the relationship between colleague solidarity and ITS among nurses, and the total effect of colleague solidarity on ITS was  $0.659$  and the indirect effect accounted for  $15.39\%$  of the total effect (Table 4 and Figure 1).

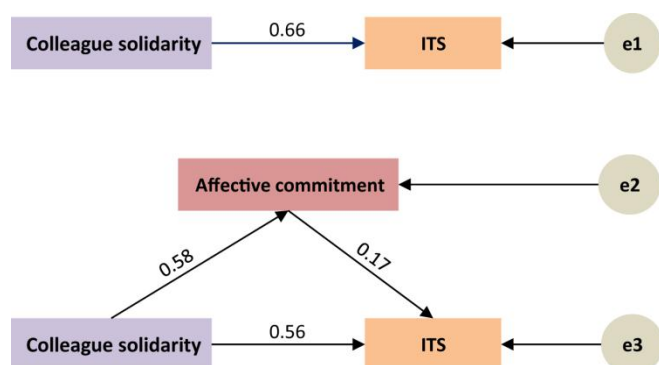
**Table 3: Multiple linear regression analysis for nurses' ITS**

Variable	B	SE	$\beta$	t	P
Constant	2.912	1.125	n.a.	2.587	0.010
Emotional solidarity	0.304	0.037	0.437	8.292	<0.001
Affective commitment	0.141	0.046	0.172	3.039	0.003
Academic solidarity	0.160	0.062	0.170	2.579	0.010

R=0.677, adjusted R<sup>2</sup> = 0.453, F = 96.356,  $P < 0.001$ . n.a., not applicable

**Table 4: Mediating effect analysis of affective commitment**

Model	Dependent variable	Independent variable	B	SE	$\beta$	t	P
1	ITS	Colleague solidarity	0.251	0.015	0.659	16.239	<0.001
2	Affective commitment	Colleague solidarity	0.271	0.020	0.583	13.311	<0.001
3	ITS	Colleague solidarity	0.212	0.019	0.557	11.348	<0.001
		Affective commitment	0.142	0.040	0.174	3.541	<0.001



**Figure 1: Mediating effect model of affective commitment.** ITS, intent to stay.

## 4. Discussion

### 4.1 Situations of colleague solidarity, affective commitment and ITS among nurses

Our results revealed that nurses' colleague solidarity was at high level, of which the lowest scoring dimension was academic solidarity, are similar to the previous report of Liu *et al.* [18], which had showed that the development of nursing research in our country was relatively lagging, the clinical nursing work was heavy and the nurses lacked of scientific research consciousness; all these factors led to relatively low academic solidarity among nurses. Therefore, it's imperative to take effective measures to improve nurses' academic solidarity, and ultimately to promote the overall solidarity among nurses. Nurses' affective commitment was at a moderate level, is lower than previous research conducted in USA [19], indicating that the level of affective commitment among nurses in our country is unsatisfactory. Thus, it is necessary to

adopt targeted measures to stimulate nurses' positive emotions and improve their affective commitment. We also found that the nurses only had moderate level of ITS, is similar to the finding obtained by Zhu *et al.* [20], but is slightly higher than that reported by Xiao *et al.* [21]. This may be attributed to different scales used for the measurement of ITS. Therefore, more effective strategies should be developed to increase nurses' ITS. In addition, demographic characteristics observed in our study were all associated with nurses' ITS, is consistent with findings reported by scholars at home and abroad [12, 20, 22], suggesting that strategies for retention of nurses need to be individualized based on different demographic characteristics among nurses.

### 4.2 Colleague solidarity and affective commitment were positive predictors of nurses' ITS, and emotional solidarity was the strongest predictor

In this study, colleague solidarity could positively influence ITS. Colleague solidarity increases the productivity of the nursing team by enabling efficient coordination as well as developing the knowledge and abilities of nurses, and thus reduces nurses' exhaustion and work stress. Moreover, the high level of solidarity will encourage nurses build a deeper friendship and a stronger emotional attachment to each other, and which finally prevent nurse turnover behavior. Evidence had indicated that harmonious interpersonal relationships among colleagues were the decisive factors affecting nurses' ITS [23], nurses had a greater tendency to stay in current job when they were treated with respect, trust and support by their colleagues and had good relationships with them [24]. This finding is also consistent with Bonreager *et al.*'s study [25] in that effective group

cohesion was demonstrated to be a significant predictor of job satisfaction and ITS among newly licensed registered nurses. Therefore, efforts have to be made to enhance nurses' colleague solidarity. Nurse leaders should cultivate teamwork of nurses and create a supportive atmosphere in the workplace. They should adopt lecture or training and promote academic exchanges among nurses, which were of great significance to improve nurses' colleague solidarity.

Our study found that affective commitment could positively influence ITS. Affective commitment is nurses' positive psychological disposition towards organization. Nurses who have a high level of affective commitment will believe in and support goals and values of the organization, be more loyal to the organization and have stronger intrinsic motivation of working. In turn, they will be more voluntarily and actively involved in the organization, and be prone to stay in the current job. Previous research by Brunetto *et al.* [26] reported that affective commitment was significantly and negatively related to turnover among 718 nurses in North American, which indirectly supports the results of our study. Research had suggested that compared to job satisfaction, affective commitment as a broader concept reflects the employees' sense of belonging to the organization as a whole; furthermore, affective commitment is more stable and develops slowly but consistently over time [27]. Thereby we guess that fostering affective commitment may be more meaningful in terms of promoting nurses' retention. However, Engeda *et al.* [28] found no significant relation between affective commitment and ITS among nurses working in Amhara, Ethiopia. This disparity may be explained by differences in cultural background and instruments between the two studies. Furthermore, more studies should be carried out to determine the relationship between the two variables. Therefore, efforts have to be made to improve nurses' sense of identity and belonging to the hospital. It's crucial to establish a fair and reasonable reward system, encourage nurses to participate in hospital management and build positive nursing work environment. Besides, more promotion and career development opportunities should be made to stimulate nurses' work motivation.

Moreover, in the present study, emotional solidarity was the strongest predictor for nurses' ITS, indicating that nurses care more about emotional solidarity among colleagues in China. This may be attributed to the importance of friendship in Chinese traditional culture. Nurses build a deep friendship in long-term harmonious working relationships, and thus have a greater tendency to stay in the current job.

#### 4.3 Affective commitment played a partial moderating role on the relationship between colleague solidarity and ITS

In our study, colleague solidarity not only could directly increase ITS but also could indirectly increase ITS through enhanced affective commitment, is in accordance with opinions of the theoretical model of clinical nurses' ITS proposed by Cowden *et al.* [7]. The result implied

strategies that will promote positive emotional communications among nurses, for example, by organizing party, picnic and other group activities after work. Moreover, nurse leaders should encourage nurses to conduct clinical nursing research, carry out regular academic

that affective commitment played an important role on the relationship between colleague solidarity and nurses' ITS. Once nurses' positive emotions are aroused by a united and cooperative atmosphere in the workplace, they will be more loyal to organization in return and show stronger ITS. Fleig-Palmer *et al.* [19] found that interpersonal mentoring reduced the turnover intentions of valued clinicians through its influence on affective commitment. Besides, previous research by Kodama *et al.* [8] suggested that the peer support could enhance nurses' affective commitment. Both findings partially support our results. Therefore, retention strategies that incorporating colleague solidarity and affective commitment should be developed in order to increase nurses' ITS effectively. In addition, our study revealed that affective commitment was not the only mediating variable, and there might be other variables that played a moderating role on the relationship between colleague solidarity and ITS. It's suggested that researchers should pay attention to other mediating variables, and further determine the influence path of colleague solidarity on nurses' ITS.

## 5. Conclusion

As the nursing shortage has become a global healthcare crisis, a better understanding of factors influence nurses' ITS is critically needed. Our study showed that nurses' ITS was just at a moderate level. Besides, the results proved that colleague solidarity could significantly and positively influence nurses' ITS, and that the effects were partially mediated by affective commitment. Therefore, hospital administrators and managers should pay more attention to nurses' ITS and understand the importance of colleague solidarity and affective commitment to ITS among nurses. It's crucial to establish a fair and reasonable reward system, encourage participatory management, build positive nursing work environment and provide more promotion and career development opportunities and so on, which will eventually increase nurses' ITS.

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