

ORIGINAL ARTICLE

Nurses' turnover intention in secondary hospitals in China: A structural equation modelling approach

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Abstract

Aim: To identify the factors affecting nurses' turnover intention.

Background: The shortage of nurses has been a great challenge worldwide, and nurses' turnover may exacerbate the situation.

Methods: A cross-sectional study was conducted among nurses in six secondary hospitals in China. A model was constructed, and structured questionnaires were adopted to measure model variables. Structural equation modelling was used to verify the model.

Results: Totally, 594 valid questionnaires were collected. The final model showed an acceptable fit, and 35.0% of the total variation was explained. Nine of the ten pathways were statistically significant. The model verified the contribution of professional value, nursing practice, job stress and social support to turnover intention and their effects were mediated by job satisfaction and organisational commitment. As hypothesized, there existed a significant effect between job satisfaction and organisational commitment. Unexpectedly, job stress had a greater direct effect on turnover intention than job satisfaction and organisational commitment.

Conclusions: The structural model provided a feasible model that could explain nurses' turnover intention in China.

Implications for Nursing Management: To prevent the turnover of nurses, administrators and managers should advisably prioritize the effect of job stress, especially in hospitals with similar medical context.

KEYWORDS

latent class analysis, nurse, occupational stress, personnel turnover, secondary care centres

1 | BACKGROUND

Lack of nursing staff is a common problem faced by health care organisations worldwide (Drennan & Ross, 2019). Given the ageing of the population and the increasing demand for nursing services, the

nurse staffing shortage is expected to worsen. It has been projected that the worldwide shortage of nurses will reach 7.6 million by 2030 (World Health Organization, 2016). The nursing workforce shortage is even more pressing in China. The number of registered nurses in China was 3.8 million in 2017; that is, 2.7 nurses per 1,000 people

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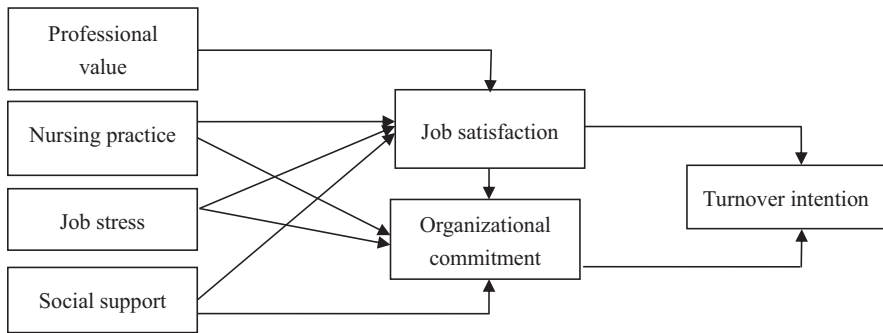


FIGURE 1 Theoretical Framework

nationwide, less than half the average level worldwide and far below the ratio in developed countries such as the United States (8.2) and Switzerland (17.5), although the total number increases annually (World Health Organization, 2018).

In addition, the high turnover rate is likely to exacerbate the nursing shortage situation and cause many problems. First, the quality of nursing services that require practical experience might drop due to the turnover of more skilled nurses. Second, the loss of nursing staff requires the remaining nurses to work more shifts, which puts more psychological pressure on them and consequently leads to more nurses leaving their jobs (Huang, 2018). Third, hospitals must invest more resources to recruit and train nurses; however, this process is usually lengthy, which might affect normal hospital operational procedures and increase patient dissatisfaction.

1.1 | Literature review

Turnover in nursing staff involves various aspects of the health care system, including the individuals, organisation and environment. It can be best predicted by the turnover intention, which refers to the likelihood of an employee leaving the current job (Michaels & Spector, 1982). Previous studies have found that nurses' turnover intention was influenced by many factors. A joint study by 10 European countries with 23,159 nurses found that burnout and elements of work environment were the factors that had the greatest influence on turnover intention (Heinen et al., 2013). Several studies have confirmed the relevance of nurses' turnover intention to their job satisfaction (Falatah & Conway, 2019; Zhang, You, et al., 2014), organisational commitment (Tang et al., 2016), social support (Zheng et al., 2015) and stress (Kim & Choi, 2015). Zhang et al. (2018) analysed studies about nurses in China mainland hospitals from 2013 to 2015 and reported that there was a moderate negative correlation between work environment and turnover intention. However, up to now, mainstream research on nursing turnover in China has examined the relationship between individual factors and turnover intention; there is a lack of systematic research exploring the interrelationship between factors by integrating various aspects into a turnover process model. Therefore, it is essential to carry out a study to systematically investigate nurses' turnover intention in China based on a scientific turnover theory.

1.2 | Structural equation model

The multidimensional staff turnover model (Price, 2001), known as Price's model, has been used and adapted in various fields for more than 20 years with proven scientific value. To explain influences on nurses' turnover intention, we constructed a model by combining Price's model with our hypothesis that nursing turnover is a response to nurses' job appraisal.

In Price's turnover model, the factors influencing job satisfaction and organisational commitment were categorized as individual (general training, job involvement, positive affectivity and negative affectivity), structural (autonomy, justice, job stress, pay, promotional chances, routinization and social support) and environmental (opportunity and kinship responsibility) factors. Therefore, this study adopted the analysis pattern and classified factors influencing turnover intention into individual and structural, that is professional value, nursing practice, job stress and social support, all serving as exogenous variables. Virtually, job satisfaction and organisational commitment served as media variables, while turnover intention (In Price's model, it was an internal variable that directly affects turnover), the best predictor of turnover behaviour, served as result variable (Figure 1).

The factors included in Price's model were adapted to the specific measures in this study. First, this study excluded external employment opportunity, family kinship responsibility and general training, factors directly affecting turnover. External employment opportunities and general training were reincluded as observed variables of job satisfaction and organisational commitment. Thus, except for kinship responsibility, other factors in Price's model were included in our model. Job involvement and positive/negative affectivity were included as the observed variables of nursing professional value, and autonomy and routinization were integrated into nursing practice. External employment opportunities, general training, fairness of distribution, promotion opportunities and pay were included as observed variables of job satisfaction and organisational commitment.

The pathways among factors were established based on evidence from existing research. Professional value may reflect an employee's fundamental understanding and views on occupation (Yarborough et al., 2017); therefore, professional value and job satisfaction were hypothesized to be positively correlated. Previous researches have found that nursing practice had a significant positive effect on both job satisfaction (Kim & Lee, 2014) and

organisational commitment (Sun et al., 2017), while job stress had a negative effect on both (Jang et al., 2015; Lupiana & Rijanti, 2015). Social support has also been identified as a factor that directly influences nurses' job satisfaction and organisational commitment (Polat & Terzi, 2020). Job satisfaction, which represents an individual's views and attitudes towards the job, affects the development of the individual and the organisation (Salem et al., 2016). Organisational commitment, referred to as an employee's level of loyalty to the organisation, is an important variable in the development of an organisation (Salem et al., 2016). Their negative effects on turnover intention have been reported repeatedly (Moon & Han, 2011; Salem et al., 2016; Zhang, You, et al., 2014). Although Price's model did not suggest a pathway between job satisfaction and organisational commitment, studies have identified significant positive correlation between these two variables (Khan & Jan, 2015; Salem et al., 2016), and thus, this pathway was included in the model.

1.3 | Purpose

In this study, we aimed to build and test a structural equation model for clarifying the factors that influence nurses' turnover intention in secondary hospitals in China, in order to provide information to hospitals and policymakers to establish a better nursing human resources and job performance management system.

2 | METHODS

2.1 | Overview

This study used a cross-sectional design. A survey was conducted to collect data from secondary hospitals in Shaanxi province, China. Structural equation modelling was used to examine the pathways between various factors and turnover intention.

2.2 | Participants and data collection

A cross-sectional survey adopting a proportionate random sampling strategy to ensure sample representativeness was conducted to recruit nurses working in six secondary hospitals located in three cities (Xi'an, Yan'an and Baoji; two facilities in each city) in the Shaanxi Province of north-west China, from December 2015 to February 2016. We chose secondary hospitals considering that nursing turnover might be the highest in these hospitals. In China, patients are free to choose a hospital of any level for their diseases or conditions, which results in many people rushing to the tertiary hospitals. Consequently, nurses preferred to work at tertiary hospitals for better salary and career development; those who choose to work for primary health care providers may enjoy the relatively less workload and lower job stress. However, nurses who work in secondary

hospitals must manage a heavy workload and meet high standards of service that are similar to the professional expectations for tertiary hospitals, but the salary is not very high, which may lead to high turnover.

In view of the recommendation of 20 participants per variable (Hoyle & Gottfredson, 2015) and invalid questionnaires, the target sample size was set at 600, as the study included 26 measurement variables. Eligible participants were those having a registered nursing licence and working as full-time staff in direct patient care settings. After obtaining approval, the trained interviewers distributed the self-completed questionnaires to the nurses and then collected them. We also collected demographic information, including age, gender, marital status, educational background and number of working years. This study was approved by relevant institutional review board.

2.3 | Measures

Professional value was measured using Yuen's professional value tool (Yeun et al., 2005), which was translated from Korean into Chinese. It includes four subscales (professional self-concept, social cognition, nursing expertise and nursing accountability) with 28 items on a 5-point Likert scale. Cronbach's α values for the original scale and for the version used in this study were 0.92 and 0.87, respectively. Nursing practice was measured by the Chinese version of Yuen's nursing practice tool (Yeun, 1995). It includes three subscales (nursing education, clinical nursing practice and communication) with 18 items on a 5-point response scale. Cronbach's α was 0.94 for both the original scale and for the version used in our study. Job stress was measured using the tool developed by Li and Liu (2000), including 35 items with a 4-point response scale. The items cover five main aspects of nursing work, that is workload burden, environment and resources, professional burden, patient care problems, and management and communication. Cronbach's α values for Li and Liu's tool and for the version used in our study were 0.86 and 0.95, respectively. Social support was measured using the tool developed by Xiao (1987) consisting of 14 items in three subscales (subject support, objective support and use of support level). Cronbach's α values for the original scale and for the version used in our study were 0.93 and 0.76, respectively.

Job satisfaction was measured using the Chinese version of Slavitt's index of work satisfaction (Slavitt et al., 1978). It consists of 32 items on a 5-point Likert scale in six subscales, that is autonomy, salary, interactions, administrative requirements, business requirements and level of professional job. Cronbach's α was 0.92 for both the original scale and for the version used in this study. Organisational commitment was measured by the Chinese translation of Meyer and Allen's organisational commitment scale (Meyer & Allen, 1991). It consists of 18 items on a 5-point Likert scale in three subscales (affective commitment, normative commitment and continuance commitment). Cronbach's α values for the original scale and for the version used in this study were 0.91 and 0.90, respectively.

Turnover intention was measured using the Michaels and Spector tool (Michaels & Spector, 1982). It consists of six items with a 4-point response scale, and the items are grouped into two subscales: intention to leave the current workplace and intention to find a new workplace. The higher the score, the stronger the turnover intention. Cronbach's α values for the original scale and for the version used in this study were 0.90 and 0.79, respectively. All the Cronbach's α values were satisfactory, supporting the validity of the scales used here.

2.4 | Data analysis

Data were analysed using SPSS statistics 22.0 and AMOS 22.0. The characteristics of the nurse participants and the measurement variables were analysed using descriptive statistics. The goodness of fit was analysed using comparative fit index (CFI), normed fit index (NFI), Tucker-Lewis index (TLI) and root mean square error of approximation (RMSEA). A model that meets the following criteria is considered to have a good fit: RMSEA <0.08, CFI >0.90, NFI >0.90 and TLI >0.90 (Kline, 2011). Bootstrapping was used to test the statistical significance of the indirect and total effects of the model.

3 | RESULTS

3.1 | Characteristics

A total of 630 questionnaires were distributed and 613 were collected, representing a 97.3% response rate. Of these, 594 questionnaires (96.9%) with complete information were used in the analysis. The demographic characteristics of participants are summarized in Table 1. The average age of the nurses was 30.0 years (Standard deviation, $SD = 7.6$). Female nurses accounted for 98.8% of the study sample, indicating that nursing is an occupation predominantly undertaken by women in China. A total of 348 nurses (58.6%) were married.

Regarding educational background, 345 nurses (58.1%) were 3 year junior college graduates, 136 (22.9%) were graduates upgraded from junior vocational college to university, and only 54 (9.0%) nurses were graduates with a full-time bachelor's degree. No participants had a master's degree or higher.

Our data suggest that the average educational background of Chinese nurses in secondary hospitals is relatively low. Among the participants, 242 (40.7%) had worked for 3 years or less, 187 (31.5%) had worked for 4–10 years, and 165 (27.8%) had worked for more than 10 years. Considering the average age and number of working years, nurses in secondary hospitals in China were relatively young. When asked about the long-term career plan (participants could choose between the following: do nursing work for long, do nursing work until necessary, try to quit or not sure), only 57.2% of nurses working in secondary hospitals intended to do nursing work for a long time.

TABLE 1 Demographic characteristics of the participants (SD , standard deviation)

All nurse participants ($n = 594$)	
Age (years), mean (SD)	30.0 (7.6)
Female, n (%)	587 (98.8)
Marital status, n (%)	
Married	348 (58.6)
Not married	246 (41.4)
Education, n (%)	
Bachelor	54 (9.0)
Junior college to university	136 (22.9)
3-year junior college	345 (58.1)
Technical secondary school or lower	59 (10.0)
Working years, n (%)	
3 years or less	242 (40.7)
4–10 years	187 (31.5)
More than 10 years	165 (27.8)

3.2 | Measures

Table 2 reports the descriptive statistics of the variables in the hypothesized model. During the four exogenous variables, only job stress showed stronger direct correlation with turnover intention than with the two intermediate variables. Actually, it indicated the legitimacy of establishing a pathway from job stress to turnover intention. In addition, there is a relatively strong correlation between the two intermediate variables, namely job satisfaction and organisational commitment, which supports the model hypothesis of establishing the pathway between the two.

3.3 | Structural equation model

The test results for the hypothesized model as described previously were RMSEA = 0.098, CFI = 0.798, NFI = 0.772 and TLI = 0.768; the values were slightly below the recommended standard. Based on the results of modified indexes and correlations among variables, we further modified the model; that is we added the pathway from job stress to turnover intention and removed the pathway between social support and organisational commitment. The final model is shown in Figure 2. The goodness-of-fit indices of this modified model were RMSEA = 0.075, CFI = 0.903, NFI = 0.879 and TLI = 0.881. These statistics were better than those for the hypothetical model; thus, the modified model was regarded as acceptable.

The parameter estimates of the modified model of turnover intention among nurses in secondary hospitals in China are shown in Table 3. Nine of the ten pathways were found to be statistically significant. Job satisfaction, organisational commitment and job stress explained 35.0% of turnover intention; professional value, nursing practice, job stress and social support explained 38.4% of

TABLE 2 Mean item scores and Pearson correlation coefficients of the variables in the hypothesized model ($n = 594$, SD , standard deviation)

	Mean [SD]	Range	X1	X2	X3	X4	Y1	Y2
Professional value (X1)	3.93[0.46]	2.17–5.00						
Nursing practice (X2)	4.15[0.54]	2.17–5.00	0.409 ^a					
Job stress (X3)	2.17[0.49]	1.03–4.00	-0.166 ^a	-0.132 ^a				
Social support (X4)	2.93[0.56]	1.00–4.63	0.213 ^a	0.167 ^a	-0.206 ^a			
Job satisfaction (Y1)	3.41[0.53]	1.00–5.00	0.470 ^a	0.327 ^a	-0.185 ^a	0.207 ^a		
Organisational commitment (Y2)	3.35[0.60]	1.56–5.00	0.454 ^a	0.399 ^a	-0.160 ^a	0.167 ^a	0.561 ^a	
Turnover intention (Y3)	2.54[0.59]	1.00–4.00	-0.137 ^a	-0.109 ^a	0.439 ^a	-0.209 ^a	-0.318 ^a	-0.293 ^a

^aAll coefficients of Pearson correlation between the variables were significant at 0.001 level.

job satisfaction; and nursing practice, job stress and job satisfaction explained 54.6% of organisational commitment.

3.4 | Effects

The direct and indirect effects of the predictive variables in the model are shown in Table 4. For the impact on turnover intention, job stress had the greatest effect (standardized coefficient of direct effect = 0.387), followed by job satisfaction (-0.220) and organisational commitment (-0.123). The direct, indirect and total effects of job satisfaction and job stress on turnover intention were statistically significant. The direct and total effects of organisational commitment on turnover intention were also significant.

For the impact on job satisfaction, professional value had the greatest effect (standardized coefficient of direct effect = 0.372), followed by social support (0.306) and job stress (-0.242). The impact of nursing practice on job satisfaction was not significant.

For the impact on organisational commitment, job satisfaction had the greatest effect (direct effect = 0.552), followed by nursing practice (0.321) and job stress (-0.085). The effect of job satisfaction on organisational commitment was significant, as were the direct and total effects of nursing practice on organisational commitment. The direct, indirect and total effects of job stress on organisational commitment were also significant.

4 | DISCUSSION

The nursing shortage is an ongoing and pressing problem worldwide that is exacerbated by turnover in nurses. In the present study, we aimed to identify the factors that influence nurses' turnover intention in China. The results showed that only 57.2% of nurses working in secondary hospitals intended to do nursing work for long, indicating a high turnover intention, consistent with other studies in the United States (Unruh et al., 2016) and China (Cao et al., 2020). The mean total score of turnover intention (mean: 15.26, SD : 3.53)

observed in this study was comparable to findings reported in other studies focusing on turnover intention of nurses in China. For example, Li et al. (2019) reported a mean turnover intention score of 14.78 (SD : 2.30) in 324 clinical nurses from traditional Chinese medicine hospitals in the Jiangsu Province of eastern China and Yang et al. (2014) found the turnover intention score was 15.33 (SD : 3.29) in 721 registered nurses from several hospitals in Shaanxi, the same province as we studied.

We developed a structural equation model based on Price's model to investigate the factors affecting nurses' turnover intention in secondary hospitals in China. After making some modifications, the final model showed an acceptable fit. Compared with Price's turnover model that explained 12% of the variation, the final model of nurses' turnover intention developed in this study demonstrated higher explanatory power (which explained 35.0% of the variation). Also, the pathway from job satisfaction to organisational commitment, which was not included in Price's model, was found to be statistically significant, consistent with previous studies showing that satisfied nurses tend to be more loyal to their organisation (Khan & Jan, 2015; Salem et al., 2016). It should be noted that job stress was found to have a direct impact on turnover intention. The effect was even greater than job satisfaction and organisational commitment. Comparatively, previous studies reported an indirect effect of job stress on turnover intention through job satisfaction and organisational commitment (Khan & Jan, 2015; Lupiana & Rijanti, 2015; Zhang et al., 2018). Although existing studies have suggested that the most significant factor affecting turnover is job satisfaction (Li et al., 2019; Moon & Han, 2011), we found that job stress had the greatest impact on the turnover intention of Chinese nurses, indicating the existence of high job stress for nurses in China and highlighting the urgent need to alleviate it.

Professional value was found to have the greatest direct effect on job satisfaction, as well as an indirect effect on turnover intention through job satisfaction. Nurses' professional values are a prerequisite for their ability to take care of patients because they reflect the value of their work. The correlation of professional value with job satisfaction has been acknowledged in a

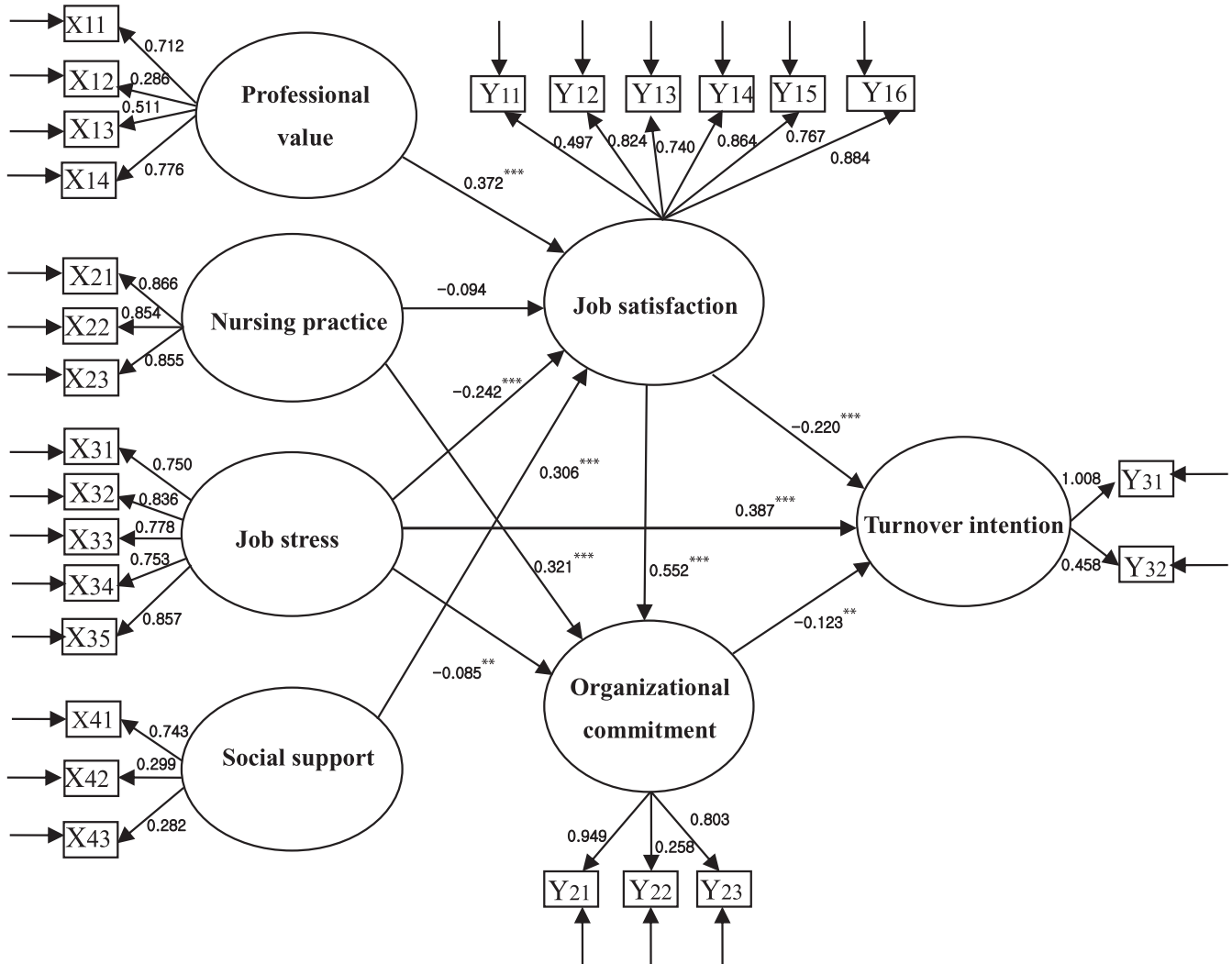


FIGURE 2 Standardized Regression Weights for the Modified Structural Equation Model. X11: Professional self-concept; X12: Social cognition; X13: Nursing expertise; X14: Nursing accountability; X21: Nursing education; X22: Nursing practice; X23: Communication; X31: Workload burden; X32: Environment and resources; X33: Professional burden; X34: Patient care problems; X35: Management and communication; X41: Subject support; X42: Objective support; X43: Use of support level; Y11: Autonomy; Y12: Salary; Y13: Interactions; Y14: Administrative requirements; Y15: Business requirements; Y16: Level of professional job; Y21: Affective commitment; Y22: Normative commitment; Y23: Continuance commitment; Y31: Intention to leave; Y32: Intention to find. * $p < .1$, ** $p < .05$, *** $p < .01$

previous study, suggesting that professional value was positively correlated with job satisfaction (Yarbrough et al., 2017). Second, nursing practice had a significant positive effect on organisational commitment, but a negative effect on job satisfaction. This may be explained by the unsatisfactory nursing management strategies employed in Chinese public hospitals, such as assignment of inappropriate job roles, poor salary regulation, lack of incentives and lack of promotion opportunities. These factors may remarkably decrease nurses' satisfaction and passion for their job. According to Zhang et al. (2014), many experienced Chinese nurses with a high educational background were very dissatisfied with their job, as they reported that their value was not fully reflected and their performance was not properly evaluated, which then led to turnover. Third, nurses' job stress was found to have a direct effect on job satisfaction and organisational commitment, and an

indirect effect on turnover intention through job satisfaction and organisational commitment. Similar results have been reported in a previous study, showing that nurses were dissatisfied with aspects of their job including excessive workload, conflicts with patients and inappropriate nursing environment (Yang et al., 2014). The pathway from job stress to organisational commitment had a control effect on job satisfaction. Increasing nurses' organisational commitment through active encouragement and compensation may mitigate a certain amount of job stress and turnover risk, while increasing job satisfaction could reduce the negative effect of job stress on organisational commitment, and thus may be an effective measure for lowering turnover intention. Fourth, social support had a positive effect on nurses' job satisfaction and an indirect effect on turnover intention through job satisfaction, consistent with one previous study suggesting an increase

TABLE 3 Parameter estimates of the modified model of turnover intention among nurses in secondary hospitals in China (SE, Standard error)

Dependent variable	Independent variable	Parameter estimate (SE)	t-value	Standardized estimate	Squared multiple correlation
Turnover intention	Job satisfaction	-0.834(0.198) ^c	-4.208	-0.220	0.350
	Organisational commitment	-0.234(0.094) ^b	-0.481	-0.123	
	Job stress	0.678(0.071) ^c	9.599	0.387	
Job satisfaction	Professional value	0.329(0.069) ^c	4.746	0.372	0.384
	Nursing practice	-0.070 (0.044)	-1.585	-0.094	
	Job stress	-0.112(0.023) ^c	-4.750	-0.242	
	Social support	0.210(0.057) ^c	3.686	0.306	
Organisational commitment	Nursing practice	0.476(0.055) ^c	8.581	0.321	0.546
	Job stress	-0.078(0.034) ^b	-2.307	-0.085	
	Job satisfaction	1.096(0.121) ^c	9.070	0.552	

^a*p* < .1.^b*p* < .05.^c*p* < .01.**TABLE 4** Standardized direct, indirect and total effects of the modified model

Dependent variable	Independent variable	Direct effect	Indirect effect	Total effect
Turnover intention	Job satisfaction	-0.220 ^c	-0.068 ^b	-0.288 ^c
	Organisational commitment	-0.123 ^b		-0.123 ^b
	Job stress	0.387 ^c	0.080 ^c	0.467 ^c
Job satisfaction	Professional value	0.372 ^c		0.372 ^b
	Job stress	-0.242 ^c		-0.242 ^c
	Nursing practice	-0.094		-0.094
	Social support	0.306 ^c		0.306 ^c
Organisational commitment	Nursing practice	0.321 ^c	-0.052	0.270 ^c
	Job stress	-0.085 ^{**}	-0.133 ^c	-0.218 ^b
	Job satisfaction	0.552 ^c		0.552 ^c

^a*p* < .1.^b*p* < .05.^c*p* < .01.

of job satisfaction occurs with higher social support (Polat & Terzi, 2020). However, we did not observe a significant pathway from nurses' social support to organisational commitment, although the positive effect of social support on organisational commitment has been reported (Zheng et al., 2015). Among all the structural factors, job stress was found to have the strongest influence on nurses' turnover intention in China. Therefore, we recommend that hospital management teams in China pay more attention to nurses' job stress, as well as job satisfaction, and organisational commitment.

There are some limitations to this study. Data were collected from a cross-sectional survey, which made it impossible to test causal relationships. Additionally, due to time and resource constraints, we were able to recruit nurses from only six secondary hospitals, while China has about 8,000 secondary hospitals

(National Bureau of Statistics of China, 2019) where the nursing environment and nurses' turnover intention may differ greatly from that of nurses in the hospitals included here. Thus, further research using more diverse and representative samples is highly recommended.

5 | CONCLUSIONS

Based on Price's model of staff turnover, this study provides a structural model to clarify the factors affecting nurses' turnover intention in secondary hospitals in China. The model verified the contribution of professional value, nursing practice, job stress and social support to turnover intention and also verified the mediating effects of job satisfaction and organisational commitment, as well as the effect

within the two. Unexpectedly, we found that job stress had a direct impact on turnover intention to an even greater extent than job satisfaction and organisational commitment. This finding was not reported in previous studies.

6 | IMPLICATIONS FOR NURSING MANAGEMENT

In secondary hospitals in China or in other similar hospitals or countries where nurses' work is heavy and stressful, administrators and managers should pay attention to nurses' job stress. Measures and regulations for reducing nurses' job stress should be planned, for example allocate nursing human resources reasonably to reduce the workload of nurses appropriately, strengthen the protection of nurses during the work and create a harmonious working atmosphere. Activities (e.g. humanized management, higher salary, higher degree of work autonomy, ample opportunities for promotion) that increase nurses' job satisfaction and organisational commitment could also decrease the turnover intention of nurses.

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CONFLICT OF INTEREST

All authors declare that they have no conflict of interest. The research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

ETHICAL APPROVAL

This study was approved by the institutional review board of the Xi'an Medical University Ethics Committee (Approval No: HL2015910).

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