

## RESEARCH ARTICLE

# Mediating effects of empathy on the association between nursing professional values and professional quality of life in Chinese female nurses: A cross-sectional survey

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## Abstract

**Aim:** This study aimed to examine whether and to what extent, empathy mediates the association between nursing professional values and professional quality of life (ProQOL) in Chinese female nurses.

**Design:** Cross-sectional study design.

**Methods:** A convenience sample of 733 nurses from Xi'an, Shaanxi Province, China, was recruited. Each participant was invited to complete a self-administrated socio-demographic questionnaire, the Nursing Professional Values Scale, the Jefferson Scale of Empathy and the Professional Quality of Life Scale. Descriptive statistics, Pearson correlation analysis and the bootstrap method were employed to analyse data using SPSS 23.0 software.

**Results:** The participants reported a medium level of ProQOL. Nursing professional values were positively associated with compassion satisfaction but negatively associated with burnout. Empathy mediated 9.2% and 57.1% of the total observed effect of nursing professional values on compassion satisfaction and burnout, respectively.

## KEYWORDS

empathy, mediating effect, nurses, nursing, nursing professional values, professional quality of life

## 1 | INTRODUCTION

Professional quality of life (ProQOL) is an index to evaluate how healthcare professionals feel in relation to their work (Stamm 2005). It consists of compassion satisfaction (CS), burnout (BO) and secondary traumatic stress (STS) (Stamm 2005). Due to long-lasting exposure to taking care of patients with sufferings, nurses often experience increased BO and STS but decreased CS, which is traditionally considered as a "cost of caring". Reduced ProQOL can detrimentally influence the nurses' physical and psychological well-being and contribute to the loss of their compassion in clinical practice

(Sinclair, Raffin-Bouchal, Venturato, Mijovic-Kondejewski, & Smith-MacDonald, 2017). To understand the factors influencing nurses' ProQOL and its potential mechanism plays a vital role in promoting the working experience among these vital caregivers. It has been demonstrated that both nursing professional values and empathy were associated with ProQOL in clinical nurses (Altun, 2002; Ferri, Guerra, Marcheselli, Cunico, & Lorenzo, 2015; Marilaf Caro et al., 2017; Thirioux, Birault, & Jaafari, 2016; Wagaman, Geiger, Shockley, & Segal, 2015). Empathy may mediate the association between nursing professional values and ProQOL in clinical nurses. Yet, no research to date has been retrieved to explore this mediating effect.

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## 2 | BACKGROUND

Nurses are at risk of experiencing unfavourable ProQOL due to their prolonged and continuous exposure to excess workload (Gascon et al., 2013), death and dying (Samson & Shvartzman, 2017), moral distress (Austin, Saylor, & Finley, 2017) and workplace violence (Choi & Lee, 2017). For instance, approximately 82% and 86% of emergency nurses in the USA reported medium to high levels of BO and STS (Hooper, Craig, Janvrin, Wetsel, & Reimels, 2010), which may negatively influence the quality of patient care (Kim, Han, Kwak, & Kim, 2015; Mohammadi, Peyrovi, & Mahmoodi, 2017) as well as nurses' physical and psychological well-being (Hegney et al., 2013). Nurses who suffer decreased CS, increased BO and elevated STS are more likely to experience job dissatisfaction (Yang et al., 2012) and reduced willingness to remain in their profession (Austin et al., 2017; Li, Early, Mahrer, Klaristenfeld, & Gold, 2014), which, in addition to the healthcare consequences to patients, taxes long-term nursing resource management.

Nursing professional values form a framework and standard for conduct (Kangasniemi, Pakkanen, & Korhonen, 2015; Sibandze & Scafide, 2018), particularly in making decisions about complicated ethical issues (Shafakhah, Molazem, Khademi, & Sharif, 2018). Nurses' high sense of values towards their profession was found to be inversely related to the appearance of stress in the workplace (Gandoy-Crego, Clemente, Mayán-Santos, & Espinosa, 2009) and to otherwise improve the occupational experience of nursing personnel (Amin, Vankar, Nimbalkar, & Phatak, 2015) and play an important role in preventing or delaying BO (Altun, 2002).

For clinical nurses, empathy is also an essential competence, because they must establish a relationship with their patients characterized by mutual trust when providing care (Coutinho, Silva, & Decety, 2014). High measured level of empathy has been found to be associated with tangible improvements in clinical outcomes (Del Canale et al., 2012; Yuguero, Marsal, Esquerda, & Soler-Gonzalez, 2017) and meanwhile is beneficial for ProQOL in health personnel (Ferri et al., 2015; Marilaf Caro et al., 2017; Thirioux et al., 2016; Wagaman et al., 2015). It appears that both nursing professional values and empathetic ability play positive roles in preserving and enhancing nurses' ProQOL. Compassionate practice is a core health professional value; moreover, acting with empathy was seen as one the most common features of compassionate care (Bray, O'Brien, Kirton, Zubairu, & Christiansen, 2014). However, no research to date has been retrieved to explore co-factors that may mediate the association and may, consequently, provide future targets for the promotion of ProQOL in clinical nurses.

### 2.1 | Research question

Whether and to what extent, does empathy mediate the association between nursing professional values and ProQOL in Chinese female nurses?

## 3 | THE STUDY

### 3.1 | Study design and participants

A descriptive cross-sectional questionnaire survey was conducted in Xi'an, Shaanxi Province, China, from September 2017–April 2018. A convenience sample of 746 Chinese female nurses was recruited to participate in the present study. To be eligible, the nurse needed to: (a) be female; (b) care for patients directly; and (c) have been worked for more than 1 year in clinical nursing.

### 3.2 | Variables and instruments

#### 3.2.1 | Socio-demographic questionnaire

A self-administered questionnaire was designed to collect the socio-demographic and work-related data of the participants, including age, grade of hospital (primary, secondary, or tertiary), department (medicine, surgery, obstetrics and gynaecology, paediatrics, emergency or others), religious belief (yes or no), marital status (single or married), professional title (junior nurse, senior nurse or nurse-in-charge and above) and years of clinical nursing experience (1 ~ 3 years, 4 ~ 5 years, 6 ~ 10 years or more than 10 years).

#### 3.2.2 | Nursing professional values scale

Professional values of the participants were measured using the Nursing Professional Values Scale (NPVS). Based on the English version of NPVS (Weis & Schank, 2000), Chen (2007) developed a Chinese version and examined its psychometric properties, indicating a sound reliability and validity (Cronbach's  $\alpha$  coefficient = 0.930). The Chinese version of NPVS consists of 26 items and four dimensions, including care giving (10 items), activism (8 items), accountability, freedom and safety (5 items) and trust (3 items). Participants rated their agreements with the 26 items of NPVS using a Likert scale from 1 (not important)–5 (most important). The total score of NPVS ranged from 26–130, with higher scores reflecting higher levels of professional values. In the present study, the total scale yielded Cronbach's  $\alpha$  coefficient of 0.932.

#### 3.2.3 | Jefferson scale of empathy

The empathetic ability of the participants in patient care was assessed with the Jefferson Scale of Empathy (JSE) (Hojat, Gonnella, Nasca, Mangione, Vergare, & Magee, 2002). The Chinese version of JSE was developed by Ma (2007) and comprises of 20 items. The JSE was designed to measure three components of empathy, including perspective taking (10 items), compassionate care (8 items) and standing in patients' shoes (2 items). Each item is measured on a Likert scale from 1 (strongly agree)–7 (strongly disagree). The total score of JES ranged from 20–140, with higher scores indicating higher levels of empathy. The Chinese version of JSE was reported to have a sound reliability (Cronbach's  $\alpha$  coefficient = 0.797, split-half

coefficient = 0.788) (Ma, 2007). In the present study, the total scale yielded Cronbach's  $\alpha$  coefficient of 0.830.

### 3.2.4 | Professional quality of life scale

The Professional Quality of Life Scale (ProQOL) measures how participating nurses feel in relation to their work as a helper, consisting of CS, BO and STS (Figley, 1995). This study adopted the version of ProQOL-V, which is a 30-item self-reported instrument with a Likert scale format ranging from 1 (never)–5 (very often). Scores for each subscale were computed by summing the scores of specific items; higher scores indicate higher levels of that component of ProQOL. The Chinese version of the ProQOL-V had a reasonable reliability, with Cronbach's  $\alpha$  coefficient of each subscale ranging from 0.73–0.82 (Zheng, Yang, Gao, & Chen, 2013). In the present study, Cronbach's  $\alpha$  coefficients of the CS, BO and STS subscales were 0.869, 0.727 and 0.841, respectively.

### 3.3 | Statistical analysis

Data management and data analysis were performed using EpiData (The EpiData Association) version 3.1 and SPSS (Statistical Package

for the Social Sciences for Windows, IBM) version 23.0. Basic statistics were used to describe the participants' socio-demographic characteristics. Pearson correlation analysis was performed to analyse the correlations among NPV, empathy and each dimension of ProQOL. The model 4 of PROCESS macro for SPSS (Hayes, 2013) was adopted to explore whether and if so, to what extent, the observed effect of the independent variable (nursing professional values) on the dependent variable (CS, BO and STS) is attributed to the putative mediating variable (empathy). The PROCESS macro was performed using one independent variable (nursing professional values), one mediator (empathy) and three dependent variables (CS, BO and STS). In addition, age, hospital, department, religious belief, marital status, professional title and years of clinical nursing were included as covariates. Statistical significance was set at  $p < .05$ ; all tests were two-sided.

### 3.4 | Ethics

This study was approved by the Biomedical Ethics Committee of Xi'an Jiaotong University Health Science Centre (No.: 2017–623). Prior to data collection, the attributes, potential benefits, uses and potential risks of the study were explained to and written informed consent was obtained from each participating nurse.

**TABLE 1** Descriptive statistic and distribution of professional quality of life (Mean, SD)

Category	Subcategory	N (%)	CS		BO		STS	
			Mean	SD	Mean	SD	Mean	SD
Hospital	Primary	31 (4.2)	37.7	4.7	28.0	4.4	33.0	6.5
	Secondary	255 (34.8)	37.3	5.7	26.3	4.2	28.3	7.3
	Tertiary	447 (61.0)	36.8	5.6	26.6	4.1	28.4	6.8
Department	Medicine	224 (30.6)	36.8	5.5	26.6	4.1	28.9	7.0
	Surgery	183 (25.0)	36.8	5.6	26.9	4.2	28.8	6.9
	Obstetrics and Gynaecology	69 (9.4)	38.5	5.8	25.7	4.5	29.0	8.1
	Paediatrics	59 (8.0)	39.0	6.2	25.8	4.8	28.2	7.2
	Emergency	83 (11.3)	36.4	4.6	27.0	3.4	28.6	7.3
	Others	115 (15.7)	36.2	5.6	26.5	4.4	27.5	6.3
Religious belief	Yes	21 (2.9)	37.0	5.5	26.6	4.2	28.6	7.0
	No	712 (97.1)	37.6	6.6	26.1	3.7	27.4	6.0
Marital status	Single	389 (53.1)	37.0	5.6	26.4	4.2	28.1	6.9
	Married	344 (46.9)	37.1	5.6	26.7	4.2	29.0	7.1
Professional title	Junior nurse	412 (56.2)	37.3	5.6	26.0	4.3	28.0	7.0
	Senior nurse	292 (39.8)	36.7	5.6	27.2	4.1	29.4	7.1
	Nurse-in-charge and above	29 (4.0)	36.0	4.9	27.2	3.5	28.1	5.4
Years of clinical nursing	1 ~ 3	344 (46.9)	37.4	5.6	26.3	4.2	28.9	7.2
	4 ~ 5	181 (24.8)	36.5	5.2	26.9	4.3	28.6	6.8
	6 ~ 10	144 (19.6)	36.7	5.9	26.7	4.2	28.1	7.1
	>10	64 (8.7)	36.8	5.5	26.6	4.0	27.6	6.4

Abbreviations: BO, burnout; CS, compassion satisfaction; SD, standard deviation; STS, secondary traumatic stress.

**TABLE 2** Correlation matrix of nursing professional values, empathy and professional quality of life

Variables	Nursing Professional values	Empathy
Nursing Professional values	1	
Empathy	0.344**	1
CS	0.507**	0.293**
BO	-0.279**	-0.504**
STS	0.039	-0.514**

Abbreviations: BO, burnout; CS, compassion satisfaction; STS, secondary traumatic stress.

\*\* $p < .01$ .

## 4 | RESULTS

### 4.1 | Descriptive statistic

A sample of 746 female nurses in Xi'an, Shaanxi Province, China was recruited to conduct this questionnaire survey. Of those, 733 (98.3%) returned valid questionnaire and were used for final statistical analyses. The age of the participants ranged from 20–51 (Mean = 27.0, SD = 4.1) years. Most (61.0%) of the participating nurses worked in tertiary hospitals and approximately half of the participants (46.9%) were married (Table 1). Almost all of the participants (97.1%) had no religious belief. More than half (56.2%) of the participants were junior nurses and 46.9% of the participants had a clinical experience of <3 years. Professional values of the participating nurses scored 91.2 (SD = 13.7), and the score of empathy was 97.6 (SD = 14.6). The scores of CS, BO and STS were 37.0 (SD = 5.6), 26.5 (SD = 4.2) and 28.6 (SD = 7.0), respectively.

### 4.2 | Correlations of nursing professional values, empathy and ProQOL

Nursing professional values were positively correlated with empathy ( $r = .344$ ,  $p < .01$ ) and CS ( $r = .507$ ,  $p < .01$ ) but negatively correlated with BO ( $r = -.279$ ,  $p < .01$ ) (Table 2), whereas no significant correlation was observed between nursing professional values and STS ( $r = .039$ ,  $p = .289$ ). Empathy was positively correlated with CS ( $r = .293$ ,  $p < .01$ ), but negatively correlated with BO ( $r = -.504$ ,  $p < .01$ ) and STS ( $r = -.514$ ,  $p < .01$ ).

### 4.3 | Mediating effect of empathy between nursing professional values and ProQOL

For CS, the total effect ( $c = 0.207$ ,  $SE = 0.013$ ,  $t = 15.911$ ,  $p < .001$ ) of professional values on CS was statistically significant (Step 1). Both the direct effect of professional values on the mediating variable of empathy ( $B = 0.366$ ,  $SE = 0.037$ ,  $t = 9.905$ ,  $p < .001$ ) and the direct effect of the mediating variable of empathy on CS ( $B = 0.052$ ,  $SE = 0.013$ ,  $t = 4.012$ ,  $p < .001$ ) were statistically significant (Step 2).

When profession values and empathy were simultaneously entered into the model (Step 3), the direct effect of professional values on CS was also statistically significant ( $c' = 0.188$ ,  $SE = 0.014$ ,  $t = 13.714$ ,  $p < .001$ ) (Figure 1).

For BO, the total effect ( $c = -0.086$ ,  $SE = 0.011$ ,  $t = -7.844$ ,  $p < .001$ ) of professional values on BO was statistically significant (Step 1). Both the direct effect of professional values on the mediating variable of empathy ( $B = 0.366$ ,  $SE = 0.037$ ,  $t = 9.905$ ,  $p < .001$ ) and the direct effect of the mediating variable of empathy on BO ( $B = -0.134$ ,  $SE = 0.010$ ,  $t = -13.719$ ,  $p < .001$ ) were statistically significant (Step 2). When profession values and empathy were simultaneously entered into the model (Step 3), the direct effect of professional values on BO was also statistically significant ( $c' = -0.037$ ,  $SE = 0.010$ ,  $t = -3.535$ ,  $p < .001$ ) (Figure 2).

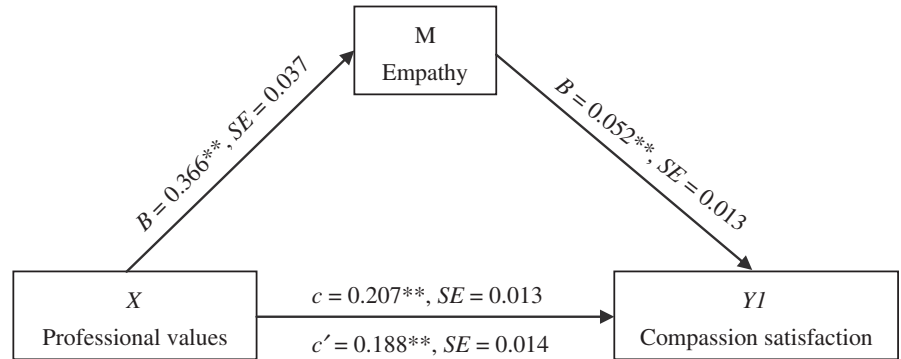
For STS, the total effect ( $c = 0.020$ ,  $SE = 0.019$ ,  $t = 1.061$ ,  $p = .289$ ) of professional values on STS was found to be non-significant (Step 1). However, both the direct effect of professional values on the mediating variable of empathy ( $B = 0.366$ ,  $SE = 0.037$ ,  $t = 9.905$ ,  $p < .001$ ) and the direct effect of the mediating variable of empathy on STS ( $B = -0.288$ ,  $SE = 0.016$ ,  $t = -18.344$ ,  $p < .001$ ) were statistically significant (Step 2). When profession values and empathy were simultaneously entered into the model (Step 3), the direct effect of professional values on STS was also statistically significant ( $c' = -0.125$ ,  $SE = 0.017$ ,  $t = 7.514$ ,  $p < .001$ ) (Figure 3).

The comparison of direct effect of professional values on ProQOL and indirect effect through empathy is shown in Table 3. When taking into account all variables (including covariates) in the tested model, the direct effect (path  $c'$ ) of professional values on CS (point estimate = 0.188, 95% CI: 0.161 ~ 0.215), BO (point estimate = -0.037, 95% CI: -0.057 ~ -0.016) and STS (point estimate = 0.125, 95% CI: 0.093 ~ 0.158) were all statistically significant; the indirect effect (path  $X$  to  $M$  \* path  $M$  to  $Y$ ) of professional values on CS (point estimate = 0.019, 95% CI: 0.010 ~ 0.029), BO (point estimate = -0.049, 95% CI: -0.061 ~ -0.039) and STS (point estimate = -0.105, 95% CI: -0.128 ~ -0.084) through empathy were also statistically significant. The total effect of professional values on CS (point estimate = 0.207, 95% CI: 0.181–0.232) and BO (point estimate = -0.086, 95% CI: -0.107 ~ -0.064) was statistically significant, but non-significant on STS (point estimate = 0.020, 95% CI: -0.017 ~ 0.057). In addition, 9.2% of the total positive effect of professional values on CS and 57.1% of the total negative effect of professional values on BO was mediated by empathy.

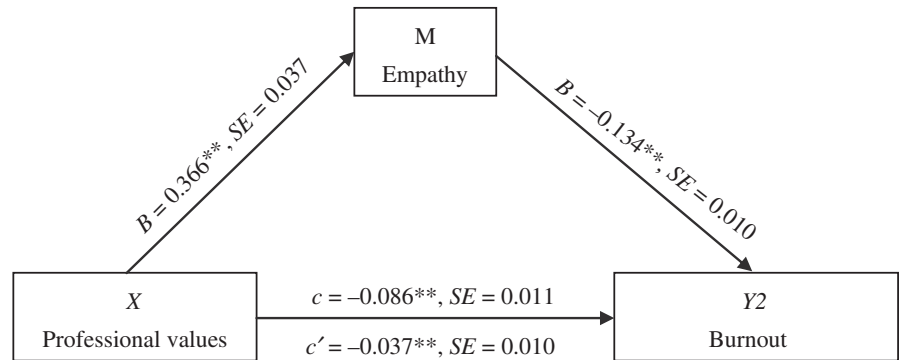
## 5 | DISCUSSION

We conducted a descriptive cross-sectional survey to investigate the level of ProQOL and explore the mediating effect of empathy on the association between nursing professional values and three facets of ProQOL in Chinese female nurses. Participating nurses in our study reported a medium level of CS, BO and STS. The effect of nursing professional values on CS and BO were partially mediated by empathy.

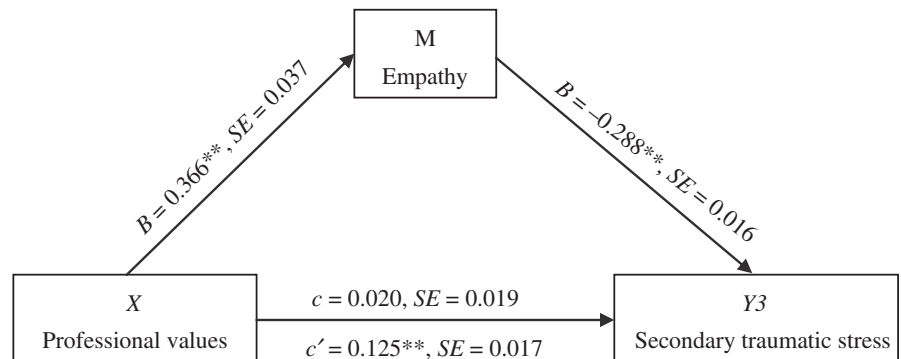
**FIGURE 1** The mediating effect of empathy on the association between nursing professional values and compassion satisfaction with non-standardized beta values and standard error.  $**p < .01$



**FIGURE 2** The mediating effect of empathy on the association between nursing professional values and burnout with non-standardized beta values and standard error.  $**p < .01$



**FIGURE 3** The mediating effect of empathy on the association between nursing professional values and secondary traumatic stress with non-standardized beta values and standard error.  $**p < .01$



Our results showed that empathy played a mediating role in the association between nursing professional values and CS. On the one hand, nurses with positive professional values were more likely to be satisfied with their work. It has been shown that nurses' high sense of professional values can directly improve the occupational experience of nursing personnel (Amin et al., 2015) and is an important factor influencing satisfaction level (Ko & Lee, 2017). On the other hand, nurses who had

a higher level of professional values were more prone to demonstrate empathy for their patients; and then, empathy played a positive role in improving CS. Thus, nursing professional values can help create positive nurse-patient interactions that indirectly may improve nurses' satisfaction (Goodarzi, Azma, Tavakolian, & Peyvand, 2015).

Additionally, empathy mediated more than half of the effect of nursing professional values on BO. The statistically significant

**TABLE 3** Comparison of direct effect and indirect effect of professional values on ProQOL

	Coefficient (95% CI)			% of total effect of NPV mediated by empathy
	Total effect	Direct effect	Indirect effect	
CS	0.207 (0.181 ~ 0.232)	0.188 (0.161 ~ 0.215)	0.019 (0.010 ~ 0.029)	9.2
BO	-0.086 (-0.107 ~ -0.064)	-0.037 (-0.057 ~ -0.016)	-0.049 (-0.061 ~ -0.039)	57.1
STS	0.020 (-0.017 ~ 0.057)	0.125 (0.093 ~ 0.158)	-0.105 (-0.128 ~ -0.084)	-

Note: For STS, the total effect was non-significant, so the ratio of indirect effect to total effect was not calculated. Abbreviations: BO, burnout; CS, compassion satisfaction; STS, secondary traumatic stress.

mediating effect of empathy on the association between nursing professional values and BO may be explained as follows. For the direct effect, according to Maslow's hierarchy of needs, nurses with positive professional values may regard providing help for others as an indicator of self-actualization (Benson & Dundis, 2003), which has been shown to be inversely associated with BO. For the indirect effect through empathy, nurses who consider nursing work as a form of altruism are more prone to implement empathetic care (Huber & Macdonald, 2012). As emotional dissonance theory indicated, however, BO severity is inversely correlated with empathy-related brain activity (Tei et al., 2014).

When examining the mediating role of empathy in the association between nursing professional values and STS, we found that both the direct effect and indirect effect were statistically significant, but the total effect was non-significant as the positive direct effect and negative indirect effect may cancel each other out (shaking effect). For the indirect effect of empathy between nursing professional values and STS, nurses with higher professional values may be more willing to devote themselves to a nursing career and, hence, do what they can to promote patients' well-being. Empathy is recognized as a component of quality care, so nurses with higher professional values are more likely to apply empathetic competence in their work, which has also been reported to be associated with lower level of STS for themselves (Michelle, 2016; Wagaman et al., 2015; Wilkinson, Whittington, Perry, & Eames, 2017). For the direct effect of nursing professional values on STS, our results showed that higher level of nursing professional values can directly lead to higher level of STS in clinical nurses. Differently, Avieli, Ben-David, and Levy (2016) showed an inverse association between professional code of ethics and STS in mental health caregivers. It remains unclear whether differences in job duties or work environment may explain differences in how professional values influence STS.

## 5.1 | Limitations

Several limitations of this study must be considered. Firstly, the present study used a convenience sample selected from Xi'an and the results may not be generalizable to populations of other geographic regions (Akram, Morteza, Eesa, & Mokhtari, 2015). Secondly, we conducted a cross-sectional questionnaire survey; hence, no definitive causal inferences can be drawn regarding the associations between nursing professional values, empathy and ProQOL. Additional studies that follow nurses prospectively are needed to tease apart some of the nuances between nursing professional values and ProQOL. Finally, we excluded male nurses in the present study because of its small proportion of males in Chinese clinical nurses. Differences in empathy capacity (Ferri et al., 2015) and ProQOL (Mooney et al., 2017; Villarin et al., 2015) by gender have been noted, so the potential mediating role of empathy in the association between professional values and ProQOL requires further exploration among male nurses.

## 6 | CONCLUSION

Our study has indicated that a medium level of ProQOL in Chinese female nurses. The results of our study suggest that the association between nursing professional values and ProQOL (CS and BO) may be partially explained by empathy. If confirmed in future studies, this finding may suggest the potential benefits of improving nurses' empathetic capacity, with an aim to reduce compassion fatigue among these vital caregivers. Hospital administrators, nurse leaders and policymakers should be aware that both the level of nursing professional values and empathy can be expected to influence ProQOL.

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## CONFLICT OF INTEREST

The authors declare no conflict of interest.

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