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Prevalence and predictors of compassion fatigue, burnout and compassion satisfaction among oncology nurses: A cross-sectional survey

Hairong Yu, Anli Jiang *, Jie Shen **

School of Nursing, Second Military Medical University, No. 800, Xiangyin Road, Yangpu District, Shanghai, PR China

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ABSTRACT

Background: Cancer is a leading cause of death worldwide. Given the complexity of caring work, recent studies have focused on the professional quality of life of oncology nurses. China, the world's largest developing country, faces heavy burdens of care for cancer patients. Chinese oncology nurses may be encountering the negative side of their professional life. However, studies in this field are scarce, and little is known about the prevalence and predictors of oncology nurses' professional quality of life.

Objectives: To describe and explore the prevalence of predictors of professional quality of life (compassion fatigue, burnout and compassion satisfaction) among Chinese oncology nurses under the guidance of two theoretical models.

Design: A cross-sectional design with a survey.

Settings: Ten tertiary hospitals and five secondary hospitals in Shanghai, China.

Participants: A convenience and cluster sample of 669 oncology nurses was used. All of the nurses worked in oncology departments and had over 1 year of oncology nursing experience. Of the selected nurses, 650 returned valid questionnaires that were used for statistical analyses.

Methods: The participants completed the demographic and work-related questionnaire, the Chinese version of the Professional Quality of Life Scale for Nurses, the Chinese version of the Jefferson Scales of Empathy, the Simplified Coping Style Questionnaire, the Perceived Social Support Scale, and the Chinese Big Five Personality Inventory brief version. Descriptive statistics, *t*-tests, one-way analysis of variance, simple and multiple linear regressions were used to determine the predictors of the main research variables.

Results: Higher compassion fatigue and burnout were found among oncology nurses who had more years of nursing experience, worked in secondary hospitals and adopted passive coping styles. Cognitive empathy, training and support from organizations were identified as significant protectors, and 'perspective taking' was the strongest predictor of compassion satisfaction, explaining 23.0% of the variance. Personality traits of openness and conscientiousness were positively associated with compassion satisfaction, while neuroticism was a negative predictor, accounting for 24.2% and 19.8% of the variance in compassion fatigue and burnout, respectively.

* Corresponding author. Tel.: +86 21 81871501/13918248609.
** Co-corresponding author.
E-mail addresses: yhr900926@126.com (H. Yu), alj1018@aliyun.com (A. Jiang), shenjie0801@126.com (J. Shen).

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Conclusions: Oncology care has unique features, and oncology nurses may suffer from more work-related stressors compared with other types of nurses. Various predictors can influence the professional quality of life, and some of these should be considered in the Chinese nursing context. The results may provide clues to help nurse administrators identify oncology nurses' vulnerability to compassion fatigue and burnout and develop comprehensive strategies to improve their professional quality of life.

What is already known about the topic?

- Owing to increased cancer incidence and a growing staff shortage, Chinese oncology nurses may be vulnerable to work-related stresses and face challenges to keep their professional quality of life.
- Extant models and literatures have demonstrated that diverse demographic and work-related factors, the variables of empathy, personality, coping style, and social support might act as potential predictors to the three constructs of professional quality of life (compassion fatigue, burnout and compassion satisfaction).
- There is a paucity of literatures exploring the prevalence and predictors of professional quality of life among Chinese oncology nurses.

What this paper adds

- Chinese oncology nurses with more years of clinical nursing experience, those worked in secondary hospitals, and those adopted passive coping were found to have higher level of compassion fatigue and burnout.
- Cognitive empathy, relevant training and support from organizations were identified as significant protectors to increase compassion satisfaction and decrease burnout.
- Nurses with personality traits of openness and conscientiousness reported more compassion satisfaction, while neurotic nurses showed lower level of compassion satisfaction and higher level of burnout and compassion fatigue.

1. Introduction

Cancer is a leading cause of death around the globe, accounting for 22% of all non-communicable disease deaths in 2012 (World Health Organization, 2013). In China, approximately 3.5 million people are diagnosed with cancer every year (Chinese Center for Disease Control and Prevention, 2013). The increased incidence clearly requires a greater number of experienced oncology nurses, but a growing staff shortage is a serious problem in Chinese nursing (Yun et al., 2010).

Cancer patients experience long-term suffering and manifest diverse symptoms (Quinal et al., 2009). The deterioration of their health and repeated hospital admissions usually cause physical and psychological agony for the patients (Bush, 2009). Therefore, it is inevitable that oncology nurses witness all of this suffering and offer necessary nursing care and psychological supports. Moreover, the loss of a patient may be an emotional shock for the nurses, because a mutual caring relationship is gradually established (Fetter, 2012). All these factors can greatly affect incumbent oncology nurses.

The term "professional quality of life" refers to "the quality one feels in relation to their work as a helper" (Stamm, 2010) and covers both positive and negative aspects. It can reflect the comprehensive quality of caring work that oncology nurses experience. However, most studies in China have focused on the subjects of burnout, turnover rate, and similar issues among oncology nurses, and few studies have examined the professional quality of life in this population. Given the significance of this topic, the aim of this study is to investigate the prevalence and potential predictors of the three aspects of professional quality of life among Chinese oncology nurses to deepen our knowledge of work-related stress and help nursing administrators focus on the well-being of the individuals within this special group.

2. Literature review

2.1. Current situation of oncology nursing in China

Chinese cancer patients and their relatives usually try their best to seek positive treatments upon receiving a cancer diagnosis. Because of the current medical system and less-developed hospice care situation in China, many cancer patients in terminal stages choose tertiary or secondary hospitals for medical services. Both choices lead to a high demand for oncology nursing care. In this context, institutions have begun to train oncology clinical nurse specialists; however, there is still a scarcity of these professionals (Xu and Wang, 2015). Most Chinese oncology nurses start working in this specialty after only a short-term orientation training. Their relatively lower average age and higher turnover rate could further increase the instability of the current oncology nursing system (Yun et al., 2010). Moreover, in mainland China, death education for oncology nurses is insufficient, which explains why many oncology nurses have reported difficulty in managing the deaths of their patients (Cui et al., 2011).

2.2. Three constructs of professional quality of life

Professional quality of life has three constructs: compassion fatigue and burnout are considered negative aspects, and compassion satisfaction is considered positive. The professional quality of life of nurses has attracted attention from nursing scholars, and related studies have covered a wide range of topics, such as exploring predictors, and developing instruments and interventions (Flarity et al., 2013; Shen et al., 2015).

Compassion fatigue was first reported by Joinson (1992) to describe "the loss of ability to nurture" among emergency nurses. After years of development, it has now been widely applied to a diverse range of helping professionals, including nurses, who work with traumatized and suffering individuals (Figley, 2002; Stamm, 2010). A series of literature has discussed the definition of compassion fatigue; the most frequently cited definition is "a state of exhaustion and dysfunction as a result of prolonged exposure to compassion stress and all that it evokes" (Figley, 1995).

Burnout refers to a syndrome of emotional exhaustion, depersonalization and reduced personal accomplishment as a result of dissatisfaction with the job (Maslach et al., 1996). The triggers and manifestations of compassion fatigue resemble those of burnout. However, compassion fatigue is a direct result of exposure to suffering and is linked to compassionate care, while burnout is more strongly associated with work environments and career responsibilities and develops even among professionals who do not experience others' misery (Flarity et al., 2013). Moreover, burnout tends to progress over time, whereas compassion fatigue often occurs suddenly in response to a specific event (Mason et al., 2014).

Actually, working with suffering people can be beneficial for helping professionals. Such benefits are defined as compassion satisfaction (Stamm, 2005). Compassion satisfaction includes positive feelings about helping others, finding meaning in one's efforts, and experiencing positive collegial support (Sodeke-Gregson et al., 2013). In general, this trio of factors seems to represent all major aspects of professional quality of life (Haber et al., 2013).

2.3. Theoretical models and potential predictors of professional quality of life

Figley (1995) first described empathy as a risk factor for nurses' compassion fatigue; in the *Multi-factor Model of Compassion Fatigue* (Figley, 2002), he elaborated that being empathic could predict compassion fatigue. In this model, empathic ability, concern and stress were considered to play a role in increasing compassion fatigue. Previous studies declared that feeling empathy could make nurses "wounded by their work" and put them at risk of compassion fatigue and burnout (Bush, 2009; Quinal et al., 2009). Empathy can be viewed as a double-edged sword; it is both a point of vulnerability and a core value for nurses, and has been identified as a characteristic of those with a higher level of compassion satisfaction (Gleichgerrcht and Decety, 2013).

Because professional quality of life can reflect the level of work-related stress, influencing factors associated with stress might have an effect on its three aspects. Therefore, we consulted the *System-Based Model of Stress* proposed by Jiang (2010) to guide our study. Widely accepted in China, this model demonstrates that stress results from the interplay of multiple psychological and social factors, including personality, coping style, and social support. It provided the theoretical support for our study and determined the categories of expected predictors that we chose.

The literature shows that certain personality traits, such as conscientiousness, perfectionism and self-giving, are associated with compassion fatigue and that neuroticism and extraversion are associated with burnout (Keidel, 2002; Leon et al., 2008); however, no studies have focused on how personality influences compassion satisfaction. In terms of coping style, negative approaches, such as reliance on religion/spirituality, have been reported to increase the risks of compassion fatigue and burnout and to decrease compassion satisfaction (Injeyan et al., 2011).

Social support plays a significant role in relieving compassion fatigue and burnout among health care professionals, and support from organizations has drawn the attention of nursing scholars. Aycock and Boyle (2009) conducted a national survey that identified available resources to help oncology nurses counter compassion fatigue. They reported the perils of failing to address compassion fatigue and oncology nurses' limited access to supportive resources, which have an availability ranging from 0% to 60%. Interventions such as self-efficacy improvement, bereavement comfort, and specialized retreats were found to be beneficial for alleviating compassion fatigue and burnout and strengthening compassion satisfaction (Berger and Gelkopf, 2011; Flarity et al., 2013).

The demographic factors that may influence the three constructs have also been explored in previous studies; these factors include age, gender, education level, marital status, and religion, among others (Demirci et al., 2010; Kim et al., 2015). Work-related factors such as years of clinical nursing, work department, shifts and loadings, and characteristics of the working hospital have also shown a significant correlation with compassion fatigue and burnout (Jasperse et al., 2014; Shang et al., 2013).

2.4. Hypothetical model

Based on the two theoretical models and the extant literature, we hypothesized that demographic and work-related factors, psychological variables and social support may be associated with professional quality of life. The variables of empathy, personality and coping style are included in the psychological category. This study was conducted to examine how the variables in each category contributed to the three constructs of professional quality of life among Chinese oncology nurses. The hypothetical model is presented in Fig. 1.

3. Methods

3.1. Sample and setting

A cross-sectional survey was conducted in Shanghai, China, from March to June 2013. Convenience and cluster sampling was used to select study participants, who were clinical oncology nurses from five secondary hospitals and ten tertiary hospitals. To be eligible, they needed to work in the oncology department, directly care for cancer patients and have more than 1 year of nursing experience in oncology. Head nurses or nurse educators responsible for nursing management/teaching and nurses who were

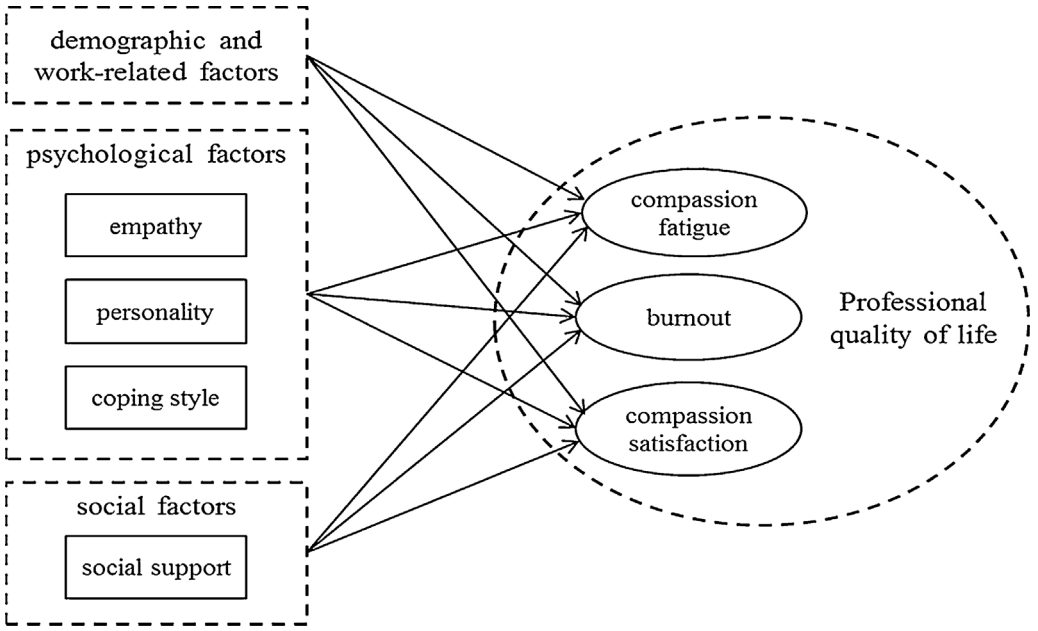

Fig. 1. Hypothetical model of professional quality of life.

leaving their positions for over one week were excluded. The sample size was determined using the formula $N \geq 50 + 8\ m$ (m is the number of independent variables) to test for multiple correlations (Tabachnick and Fidell, 2012). In this study, a total of 14 demographic and work-related factors and 13 scale-associated dimensions were considered independent variables, so at least 266 participants ($50 + 8 \times 27$) were needed. Considering the existing conditions, we planned to recruit 600 participants.

3.2. Variables and instruments

A total of six instruments were used to collect the demographic and work-related details of the participants and to measure the three dependent variables (compassion fatigue, burnout and compassion satisfaction) and the expected predictors, such as empathy, personality, coping style, and social support.

3.2.1. Demographic and work-related data questionnaire

A self-designed questionnaire was used to collect the demographic and work-related data of the participants, including age, gender, religion, marital status, living condition, educational background, professional title, years of clinical and oncology nursing, work department and hospital. The participants were also asked whether they had received training on alleviating death-related grief, the psychological care of cancer patients, and psychological adjustment for nurses.

3.2.2. Chinese version of the Professional Quality of Life Scale for Nurses

The Professional Quality of Life Scale measures compassion satisfaction, compassion fatigue and burnout among different groups of helping professionals (Stamm, 2005). Shen et al. (2015) developed the 25-item Chinese version of the Professional Quality of Life Scale for Nurses with three dimensions: compassion satisfaction (10 items), compassion fatigue (8 items) and burnout (7 items). It uses a 5-point Likert response set, and Items 1 and 13 are scored in reverse. The three dimensions are independent and do not yield a composite score; higher scores in each dimension indicate higher levels of that dimension. The Cronbach's α coefficients for each dimension range from 0.758 to 0.821, and the test–retest reliability coefficients range from 0.764 to 0.867.

3.2.3. Chinese version of the Jefferson Scale of Empathy

The Jefferson Scale of Empathy was developed to measure empathic qualities in patient care (Hojat et al., 2002). The Chinese version of the Jefferson Scale of Empathy was developed and validated by Ma (2007), and it consists of 20 items and three subscales: perspective taking (tendency to spontaneously adopt the views of patients), compassionate care (emotional connectedness that transpires in nursing practice), and "standing in the patient's shoes" (ability to think like the patients). Each item is measured on a seven-point Likert scale, and ten items are scored in reverse. Ma (2007) reported that the Chinese version had a Cronbach's α coefficient of 0.797 and a split-half coefficient of 0.788.

3.2.4. Chinese Big Five Personality Inventory brief version

Wang et al. (2010) developed the Chinese Big Five Personality Inventory to assess the facets of the Big Five model in a Chinese population. In 2011, they created and validated a brief version, which demonstrated better accessibility and adaptability to Chinese culture (Wang et al., 2011). The brief version contains 40 items; each item is scored on a six-point scale, and seven items are scored in reverse. There are eight items for each dimension

(extraversion, conscientiousness, agreeableness, neuroticism and openness), and the scores for every 8 items are summed to produce an individual score. The brief version demonstrated Cronbach's α coefficients from 0.764 to 0.814, with an average test–retest reliability coefficient of 0.742.

3.2.5. Simplified Coping Style Questionnaire

The Simplified Coping Style Questionnaire was developed to measure coping style in Chinese people (Xie, 1998). It consists of 20 items, and each item is rated from 0 (never) to 3 (always). The factor analysis determined two dimensions, with "active coping" including the first 12 items and "passive coping" the remaining eight. The test–retest reliability coefficient of this instrument was 0.89, and Cronbach's α coefficient was 0.90 (Wang et al., 1999).

3.2.6. Perceived Social Support Scale

The 12-item Perceived Social Support Scale was developed by Zimet et al. (1990). It is a self-report scale measuring the perceived level of support from family (Item 3, 4, 8, and 11), friends (Item 6, 7, 9, and 12), and a significant other (Item 1, 2, 5, and 10). The items are scored on a 7-point Likert-type scale. The Chinese version of the Perceived Social Support Scale was translated and tested by Huang et al. (1996) and is widely used to evaluate Chinese nurses (Wang et al., 2013).

3.3. Procedure and data collection

Approval from the Ethics Committee of the Second Military Medical University was obtained prior to data collection. The researchers then contacted the nursing department directors at each hospital and explained the purpose and meaning of this study. Once permission was granted, the head nurses of select departments were invited to serve as research assistants to explain the study's purpose to the participants. After written informed consent forms were obtained, the researchers distributed packets containing the six instruments to the participants on duty and collected complete packets on the spot. For participants who were absent during the first survey, the head nurses helped to obtain their informed consents and distribute the instruments. These participants were required to complete the instruments within one week and return the finished packet to a designated box in each department. The researchers went back to collect the instruments one week after the first survey. The participants completed the instruments anonymously, and all data were numerically coded and accessible only to the researchers to protect confidentiality. A total of 669 packets of instruments were distributed, and 656 were returned. The final sample consisted of 650 oncology nurses, representing an effective response rate of 97.16%.

3.4. Data analysis

SPSS 21.0 (IBM Company, Chicago, IL, USA) was used to analyze the data. Descriptive statistics were used to describe the participants' demographic and work-related characteristics and the prevalence of compassion satisfaction, compassion fatigue and burnout. Normal distribution of the values was tested using the Kolmogorov–Smirov test, and homogeneity of variance was tested using Levene's test. The differences in compassion satisfaction, compassion fatigue and burnout among participants with demographic and work-related characteristics were tested using the independent *t*-test and one-way analysis of variance (ANOVA). Simple regression was performed to assess the relationship between the continuous variables and three dependent ones. Those independent variables with a *p*-value less than 0.20 in the univariate analysis were entered into the multivariate analyses (Maldonado and Greenland, 1993). Stepwise multiple linear regression was used to identify the predictors of compassion satisfaction, compassion fatigue and burnout that contributed to three different models.

4. Results

4.1. Demographic and work-related characteristics of the participants

Table 1 shows the demographic and work-related data of all 650 subjects. The age of the participants ranged from 19 to 55 (29.8 ± 6.0) years. The participants practiced an average of 8.6 ($\pm$6.7) years, including 6.7 ($\pm$5.3) years of oncology nursing.

4.2. Prevalence of compassion satisfaction, compassion fatigue and burnout

The mean (SD) scores for the dimensions of compassion satisfaction, compassion fatigue and burnout were 31.81 (6.49), 21.39 (4.84), and 21.14 (4.95), respectively. The median scores (interquartile range) were 32.00 (28.00–36.00), 21.00 (18.00–24.00), and 21.00 (18.00–24.00), respectively.

4.3. Univariate analyses of the factors associated with compassion satisfaction, compassion fatigue and burnout

The results of the Kolmogorov–Smirov test suggested that the continuous variables were reasonably and normally distributed. *t*-Tests revealed that the nurses who had received three types of training showed higher compassion satisfaction than those who had not (all $p < 0.05$). Nurses working in tertiary hospitals reported significantly lower scores for compassion fatigue ($p = 0.002$). The burnout scores differed significantly among nurses working at different levels of hospitals ($p = 0.043$) and between those who had received training and those who had not (all $p < 0.05$). The results of the *t*-test and ANOVA are displayed in Table 2.

Table 3 shows the linear relationships between the continuous variables and compassion satisfaction, compassion fatigue and burnout, respectively. Both compassion satisfaction and burnout had significant linear relationships with all of the variables of empathy, personality, coping style and social support (all $p < 0.05$). Compassion fatigue was significantly associated with empathy and social support (all $p < 0.05$), except for

Table 1
Demographic and work-related characteristics of the participants ($n = 650$).

Variable	Category	*n*	%
Age, years			
	<25	89	13.69
	25–34	444	68.31
	35–44	100	15.38
	≥45	17	2.62
Gender			
	Male	2	0.31
	Female	648	99.69
Years of clinical nursing			
	<5	216	33.23
	5–9	199	30.62
	10–14	121	18.62
	≥15	114	17.54
Years of oncology nursing			
	<5	287	44.15
	5–9	207	31.85
	10–14	98	15.08
	≥15	58	8.92
Level of work hospital			
	Tertiary hospital	483	74.31
	Secondary hospital	167	25.69
Work department			
	Oncology internal medicine	355	54.62
	Oncology surgery	239	36.77
	Other oncology department	56	8.62
Educational background			
	Diploma degree	67	10.31
	Associate's degree	386	59.38
	Bachelor's degree and above	197	30.31
Professional title			
	Nurse	283	43.54
	Senior nurse	295	45.38
	Nurse supervisor and above	72	11.08
Religion			
	No religion	577	88.77
	With a religion	73	11.23
Marital status			
	Married	375	57.69
	Unmarried	266	40.92
	Widowed/ divorced	9	1.38
Living condition			
	Living alone	38	5.85
	Living with family	543	83.54
	Other conditions	69	10.62
Training on alleviating death-related grief			
	Received	284	43.69
	Did not receive	366	56.31
Training on the psychological care of cancer patients			
	Received	379	58.31
	Did not receive	271	41.69
Training on nurses' psychological adjustment			
	Received	299	46.00
	Did not receive	351	54.00

the variable of "perspective taking". In terms of personality and coping style, only 'neuroticism' and 'passive coping' had significantly positive relationships with compassion fatigue (both $p < 0.001$). Analyses of the residuals identified that they were normally distributed; therefore, the assumptions of linear regression were met.

4.4. Multiple linear regression of the predictors of compassion satisfaction, compassion fatigue and burnout

All possible predictors ($p < 0.2$ in univariate analysis) were entered as independent variables in the multiple linear regression analysis, and the predictors included in each model were different. The results of the multiple linear regression are presented in Table 4. In the model of compassion satisfaction, two subscales of empathy, two types of training and significant other support were identified as significant determinants (all $p < 0.05$), with 'perspective taking' as the strongest predictor, explaining 23.0% of the variance. The traits of "openness" and "conscientiousness" were positively associated with compassion satisfaction, while neuroticism was a negative predictor (all $p < 0.001$). Nurses with more years of clinical nursing experience, those working in secondary hospitals and those who adopted passive coping styles showed higher levels of compassion fatigue (all $p < 0.05$). Neuroticism was the strongest predictor of compassion fatigue, explaining 24.2% of the variance. The variable of burnout was significantly associated with the number of years of oncology nursing experience, the level of the hospital, a passive coping style, and a personality trait of "neuroticism". As the strongest predictor of burnout, neuroticism explained 19.8% of the variance. Burnout also had significantly negative relationships with two subscales of empathy, two types of training and support from a significant other (all $p < 0.05$). The assumptions of normality, independence, linearity and homoscedasticity for multiple linear regressions were checked with a residual analysis and generally met.

5. Discussion

The Chinese version of the Professional Quality of Life Scale for Nurses was used to measure professional quality of life in our study. When compared with Shen et al.'s study (2015), which used the same scale and focused on Chinese clinical nurses in Shanghai from different specialties, our findings showed that oncology nurses reported lower compassion satisfaction, but higher compassion fatigue and burnout. In addition to the heavy workload and long-term mutual relationships, these discrepancies can also be explained by 'moral distress', which refers to "the situations where an ethically appropriate course of action is known but cannot be taken" (Elpern et al., 2005). Oncology nurses may be vulnerable to moral distress when caring for cancer patients, especially critically ill and dying patients, which can lead to their frustration with the nursing profession.

The results of the multivariate analyses largely confirmed the hypothetical model. Although different independent variables were included in the three regression models, each

Table 2
Univariate analysis of three constructs with different demographic and work-related characteristics.

Variable	Category	Compassion satisfaction			Compassion fatigue			Burnout		
		Mean (SD)	*t/F*	*p*	Mean (SD)	*t/F*	*p*	Mean (SD)	*t/F*	*p*
Age, years			1.867	0.134		0.297	0.828		1.355	0.255
	<25	31.54 (5.86)			21.35 (5.76)			21.36 (5.10)		
	25–34	31.79 (6.59)			21.50 (4.63)			21.11 (4.89)		
	35–44	31.53 (6.48)			21.03 (5.04)			21.43 (5.25)		
	≥45	35.41 (6.43)			21.00 (3.81)			18.88 (3.90)		
Years of clinical nursing			0.600	0.615		2.156	0.092		0.549	0.649
	<5	31.75 (6.50)			20.79 (4.92)			20.81 (4.78)		
	5–9	32.17 (6.41)			21.66 (4.74)			21.19 (5.22)		
	10–14	31.19 (6.45)			22.08 (4.69)			21.49 (4.71)		
	≥15	31.98 (6.70)			21.33 (4.93)			21.29 (5.08)		
Years of oncology nursing			0.501	0.682		1.101	0.348		1.767	0.152
	<5	32.01 (6.48)			21.21 (4.92)			20.64 (4.81)		
	5–9	31.93 (6.47)			21.81 (4.73)			21.62 (5.15)		
	10–14	31.12 (6.57)			21.49 (4.92)			21.37 (4.81)		
	≥15	31.59 (6.60)			20.66 (4.63)			21.48 (5.05)		
Level of work hospital			1.033	0.302		−3.101	0.002		−2.032	0.043
	Tertiary hospital	31.97 (6.39)			21.03 (4.65)			20.91 (4.94)		
	Secondary hospital	31.37 (6.78)			22.44 (5.21)			21.81 (4.95)		
Work department			1.270	0.282		1.110	0.330		0.332	0.718
	Oncology internal medicine	31.67 (5.90)			21.62 (4.87)			21.27 (4.83)		
	Oncology surgery	32.25 (7.40)			21.03 (4.92)			20.95 (5.27)		
	Other oncology department	30.86 (5.82)			21.52 (4.20)			21.09 (4.35)		
Educational background			0.328	0.720		0.561	0.571		0.279	0.757
	Diploma degree	31.34 (5.50)			21.94 (5.32)			21.57 (4.79)		
	Associate's degree	31.77 (6.43)			21.27 (4.80)			21.09 (4.90)		
	Bachelor's degree and above	32.06 (6.93)			21.45 (4.75)			21.09 (5.13)		
Professional title			0.280	0.756		0.888	0.412		0.332	0.718
	Nurse	31.72 (6.39)			21.23 (5.05)			21.22 (4.91)		
	Senior nurse	31.77 (6.49)			21.38 (4.67)			20.98 (4.99)		
	Nurse supervisor and above	32.35 (6.94)			22.08 (4.67)			21.46 (5.03)		
Religion			1.135	0.257		−0.622	0.534		−1.537	0.128
	No religion	31.92 (6.38)			21.35 (4.79)			21.02 (4.84)		
	With a religion	31.00 (7.28)			21.73 (5.20)			22.10 (5.74)		
Marital status			1.301	0.273		0.150	0.861		0.450	0.638
	Married	32.12 (6.58)			21.43 (4.72)			21.00 (4.82)		
	Unmarried	31.33 (6.37)			21.31 (4.98)			21.30 (5.04)		
	Widowed/divorced	33.00 (5.96)			22.11 (5.95)			22.11 (7.75)		
Living condition			0.362	0.697		0.626	0.535		0.658	0.518
	Living alone	32.37 (7.64)			22.24 (4.99)			21.16 (4.81)		
	Living with family	31.71 (6.54)			21.33 (4.84)			21.22 (4.93)		
	Other conditions	32.28 (5.35)			21.43 (4.78)			20.49 (5.24)		
Training on alleviating death-related grief			−4.504	0.000		−0.002	0.998		2.748	0.006
	Did not receive	30.82 (6.35)			21.39 (4.90)			21.61 (5.05)		
	Received	33.10 (6.46)			21.39 (4.77)			20.54 (4.77)		
Training on the psychological care of cancer patients			−4.172	0.000		1.354	0.176		4.287	0.000
	Did not receive	30.57 (6.59)			21.70 (4.85)			22.11 (5.18)		
	Received	32.70 (6.28)			21.18 (4.82)			20.44 (4.67)		
Training on nurses' psychological adjustment			−4.226	0.000		−0.184	0.854		4.744	0.000
	Did not receive	30.83 (6.67)			21.36 (5.03)			21.97 (5.20)		
	Received	32.96 (6.09)			21.43 (4.61)			20.17 (4.47)		

category of predictors was associated with the three constructs, except that no relationship was reported between social support and compassion fatigue. This may be because of a relatively low awareness of compassion fatigue and a lack of targeted support in China (Shen et al., 2015). Moreover, Chinese nurses may tend to self-adjust rather than seek social support when faced with such temporary emotional stress.

As revealed in the regression model of compassion fatigue, oncology nurses from secondary hospitals reported higher compassion fatigue than those in tertiary hospitals. In China, tertiary hospitals mainly treat acute, critical and complicated diseases, providing high-quality, specialized medical services. In contrast, secondary hospitals mainly provide comprehensive health care services and primarily enroll patients with chronic diseases during rehabilitation or the final stages of disease (Yun et al., 2010). Most end-stage cancer patients are admitted to secondary hospitals, where oncology nurses provide palliative care for them. Consequently, when faced with the death of a patient with whom they have established a long-standing professional friendship, oncology nurses may experience a deeper emotional response (Aycock and Boyle, 2009).

The nurses with more years of clinical nursing experience had higher levels of compassion fatigue, possibly because they had been exposed to more of their patients' tribulations, and such persistent exposure might impose heavy emotional burdens (Mason et al., 2014). Moreover, Quinal et al. (2009) proposed that personal traumatization might lead to a greater risk of compassion fatigue when nurses care for those who remind them of their loved ones. Generally speaking, nurses with more years of work experience are likely to experience more personal suffering in their daily life.

Personality has been defined as a constellation of attributes that describe an individual's behavior across situations and over time (Injeyan et al., 2011). Individuals with neuroticism are more likely to feel angry, anxious and depressed compared with those without neuroticism (Wang et al., 2014). Consequently, neurotic nurses may have a greater inability to control their emotions when faced with negative events, putting them at higher risks of compassion fatigue.

Coping styles refer to stable strategies for overcoming challenges, and passive coping prevents people from directly addressing stressful events. Nurses who adopt passive coping often have low self-efficacy and do not believe they can do anything when facing emotional stresses (Rees et al., 2015). Moreover, neurotic nurses always regard minor frustrations as hopelessly difficult and are more inclined toward a passive coping style, which also explains the positive relationships between passive coping and compassion fatigue.

Cohen and Strayer (1996) defined empathy as comprising both emotional congruence (affective empathy) and the understanding of others' mental state (cognitive empathy), indicating there are two different domains of empathy. The subscale of 'compassionate care' in the Chinese version of the Jefferson Scale of Empathy represents affective empathy, and the subscales of "perspective taking" and "standing in the patient's shoes" reflect cognitive empathy. The results show that none of the three subscales had relationships with compassion fatigue in the multiple regression model. Currently, the growing shortage of nurses in China leads to a relatively low ratio of nurses to beds. The consequent heavy workload leaves Chinese nurses with less time to share their patients' emotions or interact with them on a spiritual level (Shen et al., 2015). Moreover, influenced by traditional Chinese culture, Chinese nurses are unaccustomed to sharing their emotions with their patients. All of the abovementioned factors may partially explain why no relationship was found between affective empathy and compassion fatigue. Similarly, "compassionate care" was not entered into the regression model of burnout.

Although two subscales of cognitive empathy were not associated with compassion fatigue, they were reported as protective factors against burnout. This may be because nurses with cognitive empathy can adjust effectively to caregiving situations and are less likely to overextend their abilities to provide support to clients (Lee et al., 2003). These findings indicate that empathy might not act as a significant risk factor for professional quality of life among Chinese oncology nurses.

Four variables in the compassion fatigue model were also identified as significant predictors of burnout, in part because overwhelming compassionate stress from caring for cancer patients may cause oncology nurses to feel exhausted by the job itself (Rossi et al., 2012). Moreover, oncology nurses in secondary hospitals have to provide repeated treatment for patients and tend to receive less support from hospitals when faced with work-related stress. Long-term exposure to highly intensive career responsibilities could further strengthen the negative effects. Passive coping, such as giving up, withdrawing or waiting for others' help may increase depersonalization and reduce personal accomplishment and job satisfaction (Li et al., 2014).

The oncology nurses who received support from significant others (e.g., leaders, colleagues) reported less burnout; however, support from family and friends was not entered into the model. Most relatives and friends do not have work experiences similar to those of the participants, so they cannot provide constructive suggestions for the situations that the participants encounter. Comparatively, sympathetic comfort and support from organizations, as well as relevant trainings can directly protect nurses from the influence of work-related stress (Traeger et al., 2013).

Previous literature has reported a negative relationship between compassion satisfaction and burnout (Rossi et al., 2012), which could somehow explain why six predictors of burnout were also included in the model of compassion satisfaction. Nurses with higher cognitive empathy not only can achieve positive feelings from helping others but also may suffer from low attachment anxiety, which is a strong predictor of compassion satisfaction (Racanelli, 2005). The effects of support from a significant other on compassion satisfaction have been confirmed by extant studies, and Höing et al. (2015) proposed that connectedness among nurses might mediate the effects.

Table 3
Simple regression for empathy, social support, personality traits, coping style and the three constructs.

Variable	Dimension	Compassion satisfaction			Compassion fatigue			Burnout		
		b	SE_b	*p*	*b*	SE_b	*p*	*b*	SE_b	*p*
Empathy		0.209	0.017	0.000	−0.032	0.014	0.025	−0.094	0.014	0.000
	Perspective taking	0.383	0.028	0.000	−0.004	0.023	0.848	−0.137	0.023	0.000
	Compassionate care	0.150	0.037	0.000	−0.070	0.028	0.012	−0.085	0.029	0.003
	"Standing in the patient's shoes"	0.625	0.091	0.000	−0.290	0.069	0.000	−0.489	0.069	0.000
Social support		0.176	0.019	0.000	−0.060	0.015	0.000	−0.111	0.015	0.000
	Family support	0.307	0.050	0.000	−0.120	0.038	0.002	−0.203	0.038	0.000
	Friend support	0.438	0.054	0.000	−0.161	0.042	0.000	−0.270	0.042	0.000
	Significant other support	0.447	0.048	0.000	−0.126	0.037	0.001	−0.279	0.037	0.000
Personality traits										
	Openness	0.334	0.038	0.000	0.022	0.030	0.452	−0.085	0.030	0.005
	Extraversion	0.272	0.040	0.000	−0.042	0.031	0.169	−0.071	0.032	0.025
	Agreeableness	0.452	0.042	0.000	−0.021	0.034	0.548	−0.181	0.034	0.000
	Conscientiousness	0.454	0.041	0.000	−0.011	0.034	0.734	−0.162	0.034	0.000
	Neuroticism	−0.214	0.032	0.000	0.312	0.022	0.000	0.289	0.023	0.000
Coping style										
	Active coping	0.370	0.043	0.000	−0.014	0.034	0.677	−0.126	0.035	0.000
	Passive coping	−0.145	0.060	0.015	0.260	0.043	0.000	0.287	0.044	0.000

Table 4
Multiple linear regression model of predictors of compassion satisfaction, compassion fatigue and burnout.

Model	Independent variable	*b*	SE_b	*b'*	*t*	*p*	R^2 change	*F*	*P*	*R* square	Adjusted R^2
Compassion satisfaction								47.870	0.000	0.374	0.366
	Constant term	4.991	1.999		2.497	0.013					
	Training on the psychological care of cancer patients	1.153	0.469	0.088	2.459	0.014	0.006				
	Training on nurses' psychological adjustment	1.292	0.462	0.099	2.797	0.005	0.020				
	Perspective taking	0.235	0.029	0.294	8.138	0.000	0.230				
	"Standing in the patient's shoes"	0.232	0.081	0.097	2.873	0.004	0.008				
	Significant other support	0.110	0.046	0.086	2.407	0.016	0.006				
	Openness	0.172	0.034	0.170	5.025	0.000	0.026				
	Conscientiousness	0.177	0.041	0.155	4.310	0.000	0.055				
	Neuroticism	−0.103	0.028	−0.121	−3.647	0.000	0.024				
Compassion fatigue								61.940	0.000	0.278	0.273
	Constant term	9.847	0.857		11.494	0.000					
	Level of work hospital	1.269	0.371	0.115	3.422	0.001	0.015				
	Years of clinical nursing	0.529	0.150	0.119	3.519	0.000	0.013				
	Passive coping	0.099	0.040	0.087	2.471	0.014	0.007				
	Neuroticism	0.304	0.022	0.479	13.556	0.000	0.242				
Burnout								32.920	0.000	0.316	0.307
	Constant term	20.062	1.657		12.106	0.000					
	Years of oncology nursing	0.564	0.170	0.110	3.318	0.001	0.010				
	Level of work hospital	0.751	0.382	0.066	1.968	0.050	0.004				
	Training on the psychological care of cancer patients	−0.976	0.378	−0.097	−2.581	0.010	0.006				
	Training on nurses' psychological adjustment	−1.247	0.370	−0.126	−3.376	0.001	0.029				
	Perspective taking	−0.051	0.022	−0.084	−2.307	0.021	0.006				
	"Standing in the patient's shoes"	−0.195	0.065	−0.107	−3.021	0.003	0.018				
	Significant other support	−0.119	0.036	−0.121	−3.300	0.001	0.034				
	Passive coping	0.138	0.040	0.118	3.406	0.001	0.012				
	Neuroticism	0.225	0.023	0.346	9.579	0.000	0.198				

Regarding personality traits, we found that open and conscientious nurses reported higher compassion satisfaction, while those with neuroticism showed lower compassion satisfaction. One key feature of openness is plasticity, and open nurses may engage in more activities that enhance their satisfaction with caring work (Shi et al., 2015). Conscientious nurses are prudent, hardworking and set high standards for themselves. They can experience strong compassion satisfaction when their patients get better as a result of their high-quality care. Regarding neurotic oncology nurses, the characteristics of neuroticism may interfere with their ability to derive benefits from providing compassionate care.

5.1. Implications

The results of this study have implications in two aspects. First, nursing educators should promote relevant on-duty training for oncology nurses and raise their awareness of both the possible negative influences of working with cancer patients and the potential for compassion satisfaction. Educators should also emphasize the importance of cognitive empathy and instruct nurses to properly consider the patients' perspectives and feelings (Gleichgerrcht and Decety, 2013). Second, nursing administrators should provide effective support and design targeted interventions for nurses facing higher risks, such as those with neuroticism and a passive coping style. Improved working environments, flexible working shifts, diverse positions and active coping strategies may help oncology nurses alleviate the long-term burden of caring work. Future studies can use structural equation modeling to investigate the relationships among compassion fatigue, burnout and compassion satisfaction, adding novel and scientific evidence to the field of professional quality of life.

5.2. Limitations

Several limitations of this study are discussed. First, the use of convenience and cluster sampling limited its generalizability. This study focused on oncology nurses in Shanghai, and the results may not be applicable to other specialties and regions. The second limitation is the use of self-report instruments, because the reliability of collected data can be affected by the respondents' interests and attitudes. As the cut-off of the Chinese version of the Professional Quality of Life Scale for Nurses has not been established, we cannot describe the prevalence of the three dimensions in terms of a hierarchy. Moreover, less than half of the total variance in each model was explained by the determined predictors, indicating that other factors remain to be explored. Finally, the cross-sectional study did not assess the changes in the respondents' professional quality of life over time.

6. Conclusions

With the guidance of two theories, our study explored the prevalence and possible predictors of the three constructs of professional quality of life among Chinese oncology nurses. Work-related factors, such as the work hospitals and years of clinical nursing experience may have predictive value. Cognitive empathy, support and training from organizations acted as protective predictors, while passive coping and neuroticism appeared to place nurses at higher risk of compassion fatigue and burnout. This research can help nurse administrators identify nurses who are vulnerable to emotional burdens and develop comprehensive strategies to help them. Further studies should be conducted in different specialties and regions to promote the generalizability of our findings and explore other potential predictors. Finally, promoting professional quality of life among oncology nurses will have a favorable impact on patients' outcomes and will benefit the Chinese healthcare system.

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