

RESEARCH ARTICLE

Compassion satisfaction and compassion fatigue in haematology cancer nurses: A cross-sectional survey

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Abstract

Aim: This study aimed to investigate compassion satisfaction (CS) and compassion fatigue (CF) in haematology nurses and their associated factors.

Design: A cross-sectional survey.

Methods: The survey was conducted on 336 haematology nurses from 21 hospitals in Sichuan, China. The CS and CF were assessed by the Professional Quality of Life Scale version 5. The CF was determined by burnout and secondary traumatic stress.

Results: Haematology nurses in China had moderate levels of CS and moderate-to-low CF. Better nursing competence of teaching/consultation and communication/coordination and the percentage of critically ill patients >60% predicted higher CS. The permanent nurse, better nursing competence of communication/coordination and specialized clinical practice predicted less burnout, while working >40 hr per week or more nurse-patient conflict events predicted more burnout. In addition, working >40 hr per week, more nurse-patient conflict events and having the need of psychological support predicted higher secondary traumatic stress.

KEYWORDS

burnout, compassion fatigue, compassion satisfaction, haematology, cancer, nurses

1 | INTRODUCTION

Nurses play an important role in healthcare services. To provide high-quality care, nurses are expected to deliver patient-centred care with both empathy and compassion (Frampton et al., 2013; Sacco & Copel, 2018). Compassion is defined as 'the feeling that arises in witnessing another's suffering and that motivates a subsequent desire to help' (Goetz et al., 2010). When practising with compassion, nurses can yield a powerful human connection with patients and support their healing. Conversely, with little compassion, the very intent and value of patient-centred practice would be

undermined (Frampton et al., 2013). Therefore, compassionate care has been considered one of the core values of the nursing profession (Su et al., 2020). In the process of connect with patients, the nurses might perceive positive or negative feelings and eventually leads to compassion satisfaction (CS) or compassion fatigue (CF). CS, a sense of fulfilment and accomplishment, and its adverse state CF, are critical for nurses' well-beings and thus affect the quality of patient care. Therefore, it is critical to identify the key factors affecting the development of CS and CF, so as to develop precise strategies to keep a balance between CS and CF, and further to improve nurses' performance and patients' quality care.

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2 | BACKGROUND

When compassion drives altruistic behaviour and helps to alleviate patients' suffering, nurses gain a sense of fulfilment and accomplishment, which is called compassion satisfaction (CS) (Sacco & Copel, 2018; Wang et al., 2020). CS involves the positive feelings of pleasure, fulfilment and gratification professional caregivers' experience after they contribute to the well-being of patients (Sacco & Copel, 2018). Previous studies demonstrated that CS could increase nurses' work engagement (Engelbrecht et al., 2020; Sawatzky & Enns, 2012), quality of care (Jakimowicz et al., 2018b; Sacco & Copel, 2018) and job satisfaction (Kim et al., 2017), all of which provide positive feedback to nurses to continue in the profession (Wells-English et al., 2019). Conversely, when nurses are repeatedly exposed to trauma or situations where they are unable to alleviate patients' suffering, compassion fatigue (CF) may occur (Jakimowicz et al., 2018b; Nolte et al., 2017). CF is a negative state in which the compassion expended exceeds the nurses' restorative processes and results in a loss of recovery power (Coetzee & Klopper, 2010). CF is the 'cost of caring' (Figley, 1995) and consequently contributes to losing compassion in nursing (Sinclair et al., 2017). According to a widely used conceptual model, CF has two parts: burnout (BO) and secondary traumatic stress (STS), which can occur concurrently or singularly (Stamm, 2010). BO is 'a prolonged response to chronic emotional and interpersonal stressors on the job' (Maslach et al., 1996, 2001). STS is considered an occupational hazard due to secondary exposure to the extremely stressful or traumatic events of others (Figley, 1995; Stamm, 2010). In the process of providing direct care for patients who are suffering, STS may occur in nurses. Previous studies have found that CF resulted in low engagement (Sawatzky & Enns, 2012), poor quality of patient care (Berger et al., 2015), low job satisfaction (Kim et al., 2017; Meyer et al., 2015) and intention to leave (Arimon-Pages et al., 2019; Engelbrecht et al., 2020; Wells-English et al., 2019). Therefore, exploring the associated factors of CF versus CS and developing interventions to contain CF are critical for nurses' well-beings and the quality of patient care.

To our knowledge, very few studies have addressed CS and CF in haematology cancer nurses. In general, haematology cancer patients are more vulnerable because of various extents of immunodeficiency and systematic symptoms (Miller et al., 2019). Many patients hospitalized in haematology departments have been diagnosed with haematological cancers, which means long treatment periods, long-term and frequent hospitalizations, high cost of treatment, inferior treatment outcomes and multiple treatment side effects (Newcomb et al., 2020). As a result, those patients, as well as their families, usually suffer the burden of serious physical and psychological symptoms (Chen et al., 2021). Thus, haematology cancer nurses are expected to integrate core nursing competencies with the speciality competencies of cancer treatment, symptom management, psychological nursing, transplantation care and palliative care in their career. Unlike the residency and

fellowship training systems for physicians, in most countries, such as China, there is no speciality training for haematology cancer nurses. Thus, haematology cancer nurses might face complicated situations during practice that could affect the nurses' CS and CF. Therefore, the specific objectives of this study were to describe the levels of CS and CF experienced by haematology cancer nurses in China and to reveal which sociodemographic and work-related factors contribute to the development of CS and CF in haematology cancer nurses.

3 | METHODS

3.1 | Design, setting and participants

A cross-sectional survey was conducted with a convenience sample of haematology cancer nurses from 21 general government-owned hospitals in Sichuan Province, China, during December 2019. Sichuan Province is located in south-western China, with a population of 83,000,000. Based on China Health Statistical Yearbook 2019 (Statistics, 2019), there were 2.93 and 2.97 registered nurses per 1,000 people in China and in Sichuan Province, respectively. To be eligible for our study, all participants need to: (i) be certified registered nurses; (ii) have been working in a haematology department and providing care for haematology cancer patients for at least 6 months; and (iii) have been working in a haematology department in past 30 days previous to the time of the survey.

3.2 | Data collection

We sent survey questionnaires to 404 eligible haematology cancer nurses in 21 hospitals using WeChat, a communication application installed in smartphones, during December 2019. In order to avoid double surveys, each WeChat account could only submit one questionnaire. All questions were set as required items to avoid incomplete answers with missed values.

3.3 | Measurements

3.3.1 | Demographic and work-related information questionnaire

We used a self-designed questionnaire to collect the data of participants' sociodemographic and work-related information, such as age, sex, educational level, marital status, years of nursing experience, professional title, form of employment, working position, average work hours per week, number of night shifts per month, percentage of critically ill patients, experience of nurse-patient conflict events, need for psychological support or not and nursing competencies of five self-reported items: specialized clinical practice, communication and

coordination, professional development, teaching and consultation and critical thinking (each ranging from 1 'very poor' to 5 'very good').

3.3.2 | Professional quality of life scale

The Chinese version of the Professional Quality of Life Scale Version 5 (ProQOL-5) provided by the ProQOL office website ("Chinese - Simplified (ProQOL 2009).") was used to evaluate CS and CF among haematology cancer nurses. Permission for use of the ProQOL-5 was also obtained from the office website. Specifically, CF was determined by burnout (BO) and secondary traumatic stress (STS). The ProQOL-5 consists of three subscales: CS (10 items), BO (10 items) and STS (10 items). Each item is scored from 1 (never) to 5 (very often), and 5 items are reverse scored (Stamm, 2010; Wang et al., 2020). Each subscale scores from 10 to 50. Higher scores of the CS subscale indicate more satisfaction related to a nurse's ability to provide effective care in his or her job. Higher scores of the BO subscale mean higher risk for BO. Higher scores of the STS subscale indicate that a nurse should examine his or her feelings about the job and work environment, rather than that he or she has a problem. In brief, higher scores of BO and/or STS indicate higher CF (Stamm, 2010). The ProQOL-5 has been widely used and validated in Chinese nurses (Shen et al., 2015; Wang et al., 2020; Yu et al., 2016). In this study, the Chinese version of ProQOL-5 showed acceptable internal reliability with Cronbach's α value: CS 0.930, BO 0.845 and STS 0.746.

3.4 | Data analysis

Questionnaire data were downloaded and analysed with the SPSS 18.0. Descriptive statistics were used to describe participants' demographic and work-related characteristics and the prevalence of CS, BO and STS. Independent sample *t*-tests and one-way analyses of variance (ANOVA) were used to assess the differences in CS, BO and STS by participant characteristics. Bivariate correlation analyses were conducted where relevant. Finally, a stepwise multiple linear regression was performed to identify the predictive variables of CS, BO and STS. In the regression analysis, the dependent variables included CS, BO and STS; the independent variables included all the variables with a $p < .1$ in the univariate analysis. The criteria of stepwise method: probability-of-F-to-enter ≤ 0.05 , probability-of-F-to-remove ≥ 0.1 . A $p < .05$ was considered statistically significant.

3.5 | Ethical considerations

This study was approved by the Biomedical Research Ethical Committee of West China Hospital (No. 2019949) and was conducted in accordance with the principles of the Declaration of Helsinki. On the first page of the online questionnaire, we informed

the participant that this was an anonymous and voluntary survey. The informed consent was obtained from all participants.

4 | RESULTS

4.1 | Participants' characteristics

We received a total of 336 completed questionnaires, with a survey response rate of 83.2% (336/404). The sociodemographic and work-related data of the 336 participants are shown in Table 1. The age of the participants ranged from 20 to 57, an average 30.23 ± 5.62 years.

4.2 | Prevalence of CS, BO and STS

As shown in Table 2, 96.13% of participants presented a moderate-to-high level of CS, 50.0% presented a moderate-to-high level of BO, and 55.06% presented a moderate level of STS. We also found that BO was negatively correlated with CS ($r = -.788, p < .001$), and positively correlated with STS ($r = .475, p < .001$), but no correlation was found between CS and STS ($r = -.089, p = .104$; Table 3).

4.3 | Univariate analyses of the factors associated with CS, BO and STS

As shown in Table 4, independent sample *t*-tests and ANOVA revealed that the independent factors associated with haematology cancer nurses' CS were an age of >35 years, a bachelor's degree or above, position as head nurse or nurse faculty, over 20 years of nursing experience or the nurses serving critically ill patients $>60\%$ (for each $p < .05$). The nurses who were in a permanent position, serving critically ill patients $>60\%$, and working ≤ 40 hr per week had lower BO ($p < .05$). The nurses who worked ≤ 40 hr per week or had no need of psychological support presented lower STS. Furthermore, the bivariate analyses showed that nursing competencies of specialized clinical practice, communication and coordination, professional development, teaching and consultation, and critical thinking were positively correlated with CS ($r = .394, .474, .336, .463$ and $.406$, respectively, all $p < .001$) and negatively correlated with BO ($r = -.331, -.403, -.283, -.342$ and $-.295$, respectively, all $p < .001$; Table 3). In addition, the bivariate analyses also showed that the number of nurse-patient conflict events encountered was negatively correlated with CS ($r = -.123, p = .024$) and positively correlated with BO and STS ($r = .240, .184$, respectively, all $p < .05$).

4.4 | Regression analyses of the predictors of CS, BO and STS

Sixteen independent variables (age, marital status, educational level, form of employment, years of nursing experience, professional title,

TABLE 1 Social-demographic characteristics of the participants ($n = 336$)

Variable	Category	<i>n</i>	%
Sex	Male	5	1.49
	Female	331	98.51
Age (years)	18–25	72	21.43
	26–30	123	36.61
	31–35	80	23.81
	>35	61	18.15
Marital status	Unmarried/Divorced/Widowed	111	33.04
	Married	225	66.96
Educational level	Associate degree	85	25.30
	Bachelor degree or above	251	74.70
Years of nursing experience	1–5	115	34.23
	6–10	117	34.82
	11–15	61	18.15
	16–20	29	8.63
	>20	14	4.17
Professional title	Senior nurse or below	258	76.79
	Nurse supervisor	69	20.54
	Associate professor	9	2.68
Form of employment	Contract nurse	295	87.80
	Permanent nurse	41	12.20
Working position	General nurse	311	92.56
	Head nurse	25	7.44
Average work hours per week (hours)	≤40	170	50.60
	>40	166	49.40
Sleep hours per day (hours)	≤6	150	9.52
	>6	186	55.30
Number of night shifts per month	≤8	283	84.23
	>8	53	15.77
Percentage of critically ill patients you served in the last year	≤60%	286	85.12
	>60%	50	14.88
Encountered nurse-patient conflict events in the last year	No	137	40.77
	Yes	199	59.23
Need of psychological support	Yes	53	15.77
	No	283	84.23

working position, percentage of critically ill patients you served in the last year, encountered nurse-patient conflict events in the last year, need of psychological support, average work hours per week, nursing competence of specialized clinical practice, nursing competence of communication and coordination, nursing competence of professional development, nursing competence of teaching and consultation, and nursing competence of critical thinking) were initially included in the stepwise multiple linear regression analysis. The results of the regression analysis are presented in Table 5. In the CS model, nursing competence of teaching and consultation, nursing competence of communication and coordination and the percentage of critically ill patients significantly contributed 27.6% of the total model variance. Independent factors of better nursing

competence of teaching and consultation, better nursing competence of communication and coordination and the percentage of critically ill patients >60% predicted higher CS. In the BO model, nursing competence of communication and coordination, the number of nurse-patient conflict events encountered, nursing competence of specialized clinical practice, average work hours per week and form of employment significantly explained 23.4% of the total model variance. Independent factors of permanent nurse status, better nursing competence of communication and coordination and better nursing competence of specialized clinical practice predicted less BO, while the factors of working >40 hr per week or more nurse-patient conflict events predicted more BO. In the STS model, average work hours per week, the number of nurse-patient conflict

TABLE 2 Descriptive statistics of compassion satisfaction and compassion fatigue ($n = 336$)

Variable	<i>n</i>	%	Mean	SD	Min	Max
Compassion satisfaction			36.38	7.41	16	50
Low (≤ 22)	13	3.87				
Moderate (23 ~ 41)	243	72.32				
High (≥ 42)	80	23.81				
Compassion fatigue						
Burnout			22.51	6.20	10	43
Low (≤ 22)	168	50.00				
Moderate (23 ~ 41)	166	49.40				
High (≥ 42)	2	0.60				
Secondary traumatic stress			23.56	5.01	13	39
Low (≤ 22)	151	44.94				
Moderate (23 ~ 41)	185	55.06				
High (≥ 42)	0	0.00				

Note: Data were presented as mean, SD, minimum and maximum for each variable.

events encountered and the need for psychological support significantly explained 8.0% of the total model variance. Independent factors of working >40 hr per week, more nurse-patient conflict events and having the need of psychological support predicted higher STS. Additionally, Figure 1 summarizes the key aspects and relationships of the study findings.

5 | DISCUSSION

In this study, we conducted a survey of haematology cancer nurses working in different hospitals in Sichuan Province, Southwest China, to investigate the CS and CF of haematology cancer nurses. Meanwhile, the CF was determined by BO and STS, as these are the variables used in the survey instrument. Based on our data, haematology cancer nurses had moderate levels of CS and moderate-to-low levels of CF: 23.81% of haematology cancer nurses reported high levels of CS, while very few haematology cancer nurses reported high levels of CF (0.6% reported high levels of BO; 0% reported high levels of STS). Compared with oncology nurses (Wu et al., 2016) and emergency nurses (O'Callaghan et al., 2020), the haematology cancer nurses in this study presented lower CS, while compared with intensive care nurses (Jakimowicz et al., 2018a), our findings presented lower BO and higher STS. All above studies reported by other groups used ProQOL Version 5, as we did in our study. The differences may be related to differences in specialities, workload, environment, culture, nurse characteristics, etc.

Based on our findings, several factors were associated with haematology cancer nurses' CS and CF. First, the nurses who worked more than 40 hr per week had higher BO and higher STS. The result was consistent with previous studies. Hu et al. (Hu et al., 2016) reported that nurses who worked longer hours per week presented dose-dependently higher BO. Wang et al. (Wang et al., 2020) demonstrated that higher work hours are related to STS in nurses. The studies in nurse anaesthetists (Meng et al., 2021), haemodialysis

and peritoneal dialysis nurses (Karakoc et al., 2016) and transplant nurses (Jesse et al., 2015) demonstrated the same point. The nurses who work longer hours may immerse themselves in patients' negative emotions, due to longer contact with the patients (Shen et al., 2015), while having less time to release their own stress and maintain self-care, thus leading to physical fatigue and emotional exhaustion. However, nearly half (49.40%) of the haematology cancer nurses in this study reported working more than 40 hr weekly. Increasing the number of nurses, optimizing workflow and improving work efficiency to reduce work hours may help to prevent BO and STS, thus reducing nurses' CF.

Second, our data also suggested that permanent nurses, nurse who had signed a long-term contract with the hospital, had lower BO. In China, permanent nurses hold stable jobs and get welfare from the government, while short-term contract nurses get less welfare (Shang et al., 2014; Shen et al., 2015). The job description and responsibilities of permanent nurses are the same as short-term contract nurses, but the former are paid more and receive more benefits than contract nurses (Chao et al., 2016). As a result, permanent nurses may have more excitement and passion for their work and then present less BO. In contrast, the effort-reward imbalance experienced by short-term contract nurses would lead to more BO (Padilla Fortunatti & Palmeiro-Silva, 2017). Therefore, it is important to thoroughly comply with the Chinese *Labor Law* ("Ministry of Human Resources & Social Security of the People's Republic of China. The Labor Law of People's Republic of China", 2018) and *Nurse Regulations* ("The central people's government of the People's Republic of China. the Nurse Regulations", 2008) of 'equal pay for equal work' among nurses, regardless of the form of employment, to address pay inequity.

Third, according to our data, nurses with better nursing competencies presented higher CS but lower BO. Gribben et al. (Gribben et al., 2019) demonstrated that subjective feelings of competence and fulfilment affected the development of CS. K. Kim et al. (Kim et al., 2015) reported that nurses with high CS

TABLE 3 Correlations between compassion satisfaction, compassion fatigue and nursing competences

Variable	Nursing competences							
	Compassion satisfaction	Burnout	Secondary traumatic stress	Specialized clinical practice	Communication and coordination	Professional development	Teaching and consultation	Critical thinking
Compassion satisfaction	<i>r</i>	-.788	-.089	.394	.474	.336	.463	.406
	<i>p</i>	<.001	.104	<.001	<.001	<.001	<.001	<.001
Burnout	<i>r</i>	---	.475	-.331	-.403	-.283	-.342	-.295
	<i>p</i>	<.001	<.001	<.001	<.001	<.001	<.001	<.001
Secondary traumatic stress	<i>r</i>	-.089	---	-.004	-.074	.013	.061	.034
	<i>p</i>	.104	<.001	.944	.177	.812	.267	.540

or low BO were likely to have higher clinical competence. The relationship between communication skill and BO was also common across nurses in other specialities, such as oncology (Emold et al., 2011), hospice (Clayton et al., 2019) and infection control (Page & Graves, 2021). Nurses with better competencies of teaching, consultation, communication and coordination were more capable of dealing with patients' problems, more likely to gain positive feedback by instructing their colleagues in solving problems and more apt to maintain good relationships with patients and colleagues; thus, they experience more feelings of fulfilment, accomplishment, and inspiration and fewer emotional and interpersonal stressors. Based on these findings, emphasizing nurses' continuing education and providing nursing competence improvement programmes might benefit both nurses and patients.

Fourth, we were surprised to find that the nurses who served more critically ill patients had higher CS. The antecedents of CS include the following: (i) perceiving that caregiving is a calling; (ii) having an empathetic caregiving relationship with the patient in crisis; (iii) continuously being exposed to a stressful environment where there is collegial support; (iv) developing resilience; (v) establishing coping mechanisms; (vi) practising self-care; and (vii) achieving a work-life balance (Sacco & Copel, 2018). Although patients' critical conditions bring stress and heavy workloads to nurses, they are also essential factors for the development of CS. The difficulties of the job may be surpassed by the positive aspect of providing support for others who are in need (Hunsaker et al., 2015).

Fifth, as revealed in the multiple linear regression models, the nurses who encountered more nurse-patient conflict events reported higher BO and STS. This finding was consistent with previous studies. Lee et al. (Lee & Akhtar, 2011) revealed that tension in nurse-patient relations was a major factor in determining BO in the nursing profession. Ohue et al. (Ohue et al., 2011) demonstrated that conflict with patients was significantly associated with the emotional exhaustion subscale of BO in Japanese nurses. Christodoulou-Fella et al. (Christodoulou-Fella et al., 2017) reported that nurses with higher levels of satisfaction from the nurse-patient relationship presented less STS. The experience of nurse-patient conflict events frustrates the nurse's confidence, feelings and empathy, thus leading to BO and STS. More BO may lead to low passion for work, poor quality of care, and negative patient outcomes (Nantsupawat et al., 2016; Vahey et al., 2004), which in turn causes patient dissatisfaction and nurse-patient conflicts. Therefore, effective interventions for potential nurse-patient conflicts might be helpful to prevent BO and STS.

Last but not least, the haematology cancer nurses who reported the need of psychological support presented higher STS. Nurses who have the need for psychological support might indicate that they are suffering heavy stress and unable to cope by themselves. We recommend hospital administration routinely tracks such information and assigns psychiatrists to help those nurses.

TABLE 4 Univariate analyses of the factors associated with compassion satisfaction and compassion fatigue (n = 336)

Variable	Category	n	Compassion satisfaction			Burnout			Secondary traumatic stress					
			M	SD	t/F	p	M	SD	t/F	p	M	SD	t/F	p
Sex	Male	5	34.60	7.20	0.540	.589	27.00	7.58	-1.637	.103	28.20	9.65	-1.088	.337
	Female	331	36.40	7.42			22.44	6.16			23.49	4.90		
Age (years)	18-25	72	35.89	6.19	2.802	.040	22.64	6.39	1.519	.209	22.97	4.95	1.497	.215
	26-30	123	35.34	7.61			23.30	6.07			23.77	5.23		
	31-35	80	36.74	8.38			22.04	6.84			23.03	5.05		
	>35	61	38.57	6.56			21.38	5.18			24.54	4.45		
Marital status	Unmarried/ Divorced/ Widowed	111	35.40	7.46	-1.711	.088	23.00	6.78	1.020	.308	22.97	4.83	-1.520	.130
	Married	225	36.86	7.35			22.27	5.89			23.85	5.07		
Educational level	Associate degree	85	34.79	7.38	-2.304	.022	23.48	6.53	1.680	.094	23.38	4.80	-0.396	.692
	Bachelor degree or above	251	36.92	7.35			22.18	6.06			23.63	5.08		
Form of employment	Contract nurse	295	36.09	7.37	-1.932	.054	22.76	6.16	1.968	.050	23.53	5.07	-0.331	.741
	Permanent nurse	41	38.46	7.44			20.73	6.27			23.80	4.55		
Years of nursing experience	1-5	115	35.10	7.31	3.719	.006	23.07	6.27	2.296	.059	23.31	5.19	1.487	.206
	6-10	117	35.77	7.34			23.23	6.44			23.68	5.13		
	11-15	61	38.16	7.91			20.93	6.07			22.75	4.64		
	16-20	29	37.90	5.95			21.90	4.94			25.28	4.83		
	>20	14	41.00	6.16			20.00	5.16			24.57	3.69		
Professional title	Senior nurse or below	258	35.86	7.33	3.615	.028	22.50	6.13	0.528	.590	23.21	5.02	2.828	.061
	Nurse supervisor	69	37.70	7.71			22.81	6.74			24.68	5.02		
	Associate professor	9	41.11	4.23			20.56	3.28			25.11	2.57		

(Continues)

TABLE 4 (Continued)

Variable	Category	n	Compassion satisfaction			Burnout			Secondary traumatic stress					
			M	SD	t/F	p	M	SD	t/F	M	SD	t/F	p	
Working position	General nurse	311	36.11	7.45	-2.390	.017	22.63	6.25	1.233	.219	23.44	5.08	-1.537	.125
	Head nurse	25	39.76	6.03			21.04	5.47			25.04	3.79		
Sleep hours per day (hours)	≤6	150	36.57	7.20	0.434	.665	22.69	6.26	0.472	.638	23.72	5.08	0.517	.605
	>6	186	36.22	7.58			22.37	6.16			23.44	4.95		
Percentage of critically ill patients you served in the last year	≤60%	286	35.77	7.24	-3.648	<.001	22.86	6.07	2.478	.014	23.57	4.96	0.034	.973
	>60%	50	39.84	7.48			20.52	6.58			23.54	5.28		
Need of psychological support	No	283	36.12	7.26	-1.457	.146	22.59	6.24	0.578	.563	23.25	4.94	-2.661	.008
	Yes	53	37.74	8.08			22.06	6.03			25.23	5.05		
Number of night shifts per month	≤8	283	36.56	7.45	1.052	.294	22.42	6.22	-0.604	.546	23.70	5.05	1.131	.259
	>8	53	35.40	7.15			22.98	6.10			22.85	4.72		
Average work hours per week (hours)	≤40	170	36.48	7.38	0.261	.794	21.57	6.18	-2.838	.005	22.58	4.68	-3.701	<.001
	>40	166	36.27	7.46			23.47	6.09			24.57	5.14		

TABLE 5 Regression analysis examining covariates of compassion satisfaction and compassion fatigue (n = 336)

Model	Compassion satisfaction ^a				Burnout ^b				Secondary traumatic stress ^c						
	B	SE	Beta	t	p	B	SE	Beta	t	p	B	SE	Beta	t	p
(Constant)	13.057	2.191		5.961	<.001	36.384	1.994		18.243	<.001	21.581	0.442		48.843	<.001
Form of employment	–	–	–	–	–	–1.817	0.912	–0.096	–1.992	.047	–	–	–	–	–
Average work hours per week	–	–	–	–	–	1.329	0.598	0.107	2.221	.027	1.827	0.526	0.183	3.471	.001
Percentage of critically ill patients you served in the last year	2.338	0.980	0.112	2.386	.018	–	–	–	–	–	–	–	–	–	–
Number of nurse-patient conflict events encountered in the last year	–	–	–	–	–	1.061	0.256	0.202	4.152	<.001	0.709	0.223	0.167	3.178	.002
Need of psychological support	–	–	–	–	–	–	–	–	–	–	2.001	0.719	0.146	2.784	.006
Nursing competence of communication and coordination	3.150	0.649	0.289	4.850	<.001	–2.497	0.509	–0.274	–4.908	<.001	–	–	–	–	–
Nursing competence of teaching and consultation	2.777	0.616	0.268	4.505	<.001	–	–	–	–	–	–	–	–	–	–
Nursing competence of specialized clinical practice	–	–	–	–	–	–1.476	0.454	–0.181	–3.253	.001	–	–	–	–	–

Note: Based on the univariate analysis and theory analysis, 16 variables with a $p < .1$ in the univariate analysis (age, marital status, educational level, form of employment, years of nursing experience, professional title, working position, percentage of critically ill patients you served in the last year, encountered nurse-patient conflict events in the last year, need of psychological support, average work hours per week, nursing competence of specialized clinical practice, nursing competence of communication and coordination, nursing competence of professional development, nursing competence of teaching and consultation, and nursing competence of critical thinking) were initially included in the regression analysis, and then using stepwise method (criteria: probability-of-F-to-enter ≤ 0.05 , probability-of-F-to-remove ≥ 0.1) to identify the significant variables in the final models. “–” indicate the variable was excluded in the final model with a $p > .05$.

^aF = 43.652, $p < .001$, $R^2 = .283$, Adjusted $R^2 = .276$.

^bF = 21.479, $p < .001$, $R^2 = .246$, Adjusted $R^2 = .234$.

^cF = 10.688, $p < .001$, $R^2 = .088$, Adjusted $R^2 = .080$.

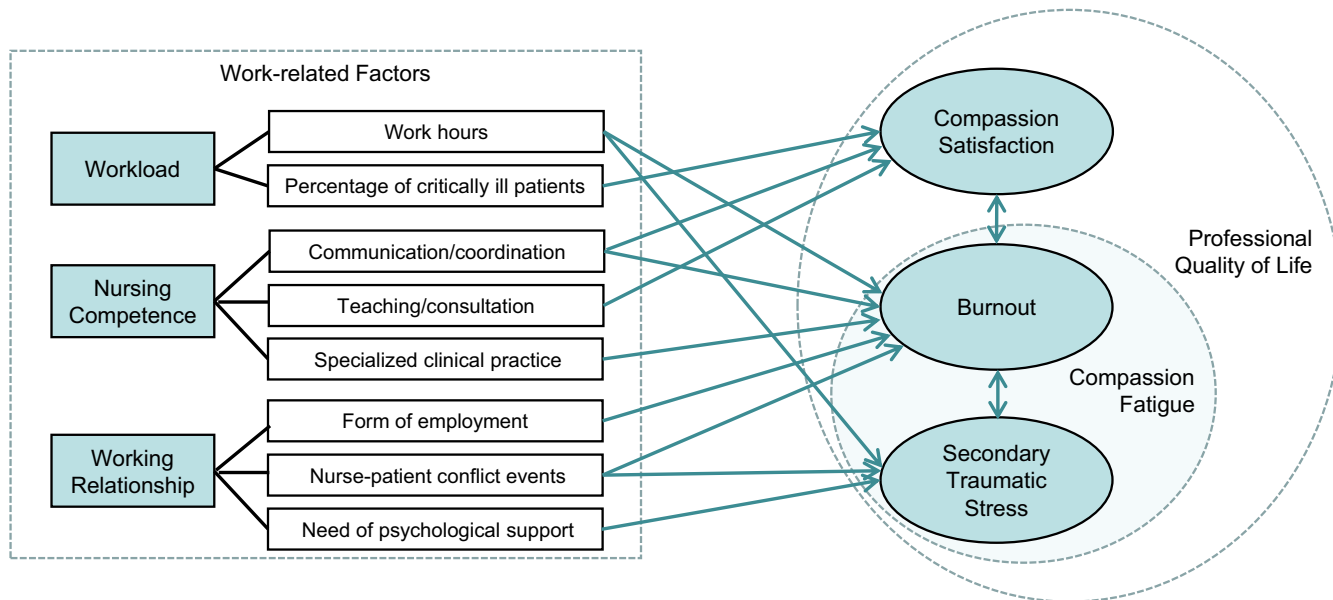


FIGURE 1 Key aspects and relationships of the study findings. Several work-related factors are the independent predictors of compassion satisfaction, burnout and secondary traumatic stress; burnout are correlated with compassion satisfaction and secondary traumatic stress

6 | LIMITATIONS

This study has several limitations. First, the cross-sectional study could not establish causation or describe the changes of nurses' CS and CF over time. Second, the scores of each subscale were varied among different studies using the same tool of ProQOL-5 (Fu et al., 2018; Jakimowicz et al., 2018a; Wang et al., 2020; Wu et al., 2016), which may be related to differences in sample areas, workload, environment, culture, nurse characteristics, etc. Therefore, although a large number of nurse participants from haematology departments across different centres were involved in our study, generalization is limited to hospitals that have similar features. Third, the determined predictors only explained <30% of the total variance for each model. Based on previous literature, we speculate that some factors are probably missing in our study, such as psychological factors, including empathy qualities (Yu et al., 2016), personality traits (Yu et al., 2016), coping strategies (Al Barmawi et al., 2019) and professionalism (Jang et al., 2016); other work-related factors, such as perceived work stress (Barr, 2018), colleague relationships (Baek et al., 2020) and specialized training (Arimon-Pages et al., 2019); and social support (Yu et al., 2016). Therefore, these factors need to be further studied.

7 | CONCLUSION

According to our findings, the haematology cancer nurses from the 21 hospitals surveyed presented moderate levels of CS and CF. BO was negatively correlated with CS, while positively correlated with STS. CS and CF were associated with nurses' demographic characteristics and work-related factors. Among them, three factors

were particularly important: longer work hours per week or more nurse-patient conflict events were associated with higher BO and STS, while better nursing competence of communication and coordination predicted higher CS and lower BO. Based on these findings, targeted interventions to decrease CF and improve CS could be developed. As a result, both nurses' well-being and quality of patient management could benefit.

7.1 | Relevance for clinical practice

Compassion is a key element of high-quality care. CS and CF are two sides of a professional quality of life; the balance between them is critical for nurses' well-being and patients' outcomes. Nurse managers should develop effective strategies to help nurses increase CS and decrease CF. For example, these strategies could include: (i) setting up maximum work hours, (ii) providing nursing competence improvement programmes (especially for competencies of communication and coordination, specialized nursing practice, etc.), (iii) giving psychological support for nurses in need, (iv) formulating a reasonable performance appraisal, salary distribution, and career development system among nurses that is consistent with 'equal pay for equal work' demands to keep the effort-reward balance.

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CONFLICT OF INTEREST

The authors declare that they have no conflict of interest.

AUTHOR CONTRIBUTIONS

YL and JL contributed to the conceptualization and design of the study, and data collection; FC analysed the data and was a major contributor in writing the manuscript, and YZ contributed to the manuscript writing – reviewing and editing. All authors read and approved the final manuscript.

DATA AVAILABILITY STATEMENT

The data in this study are not publicly available due to privacy restrictions, but are available from the corresponding author on reasonable request.

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REFERENCES

- Al Barmawi, M. A., Subih, M., Salameh, O., Sayyah Yousef Sayyah, N., Shoaqir, N., & Abdel-Azeez Eid Abu Jebbeh, R. (2019). Coping strategies as moderating factors to compassion fatigue among critical care nurses. *Brain and Behavior*, 9(4), e01264. <https://doi.org/10.1002/brb3.1264>
- Arimon-Pages, E., Torres-Puig-Gros, J., Fernandez-Ortega, P., & Canela-Soler, J. (2019). Emotional impact and compassion fatigue in oncology nurses: Results of a multicentre study. *European Journal of Oncology Nursing*, 43, 101666. <https://doi.org/10.1016/j.ejon.2019.09.007>
- Baek, J., Cho, H., Han, K., & Lee, H. (2020). Association between nursing work environment and compassion satisfaction among clinical nurses. *Journal of Nursing Management*, 28(2), 368–376. <https://doi.org/10.1111/jonm.12937>
- Barr, P. (2018). The five-factor model of personality, work stress and professional quality of life in neonatal intensive care unit nurses. *Journal of Advanced Nursing*, 74(6), 1349–1358. <https://doi.org/10.1111/jan.13543>
- Berger, J., Polivka, B., Smoot, E. A., & Owens, H. (2015). Compassion fatigue in pediatric nurses. *Journal of Pediatric Nursing*, 30(6), e11–e17. <https://doi.org/10.1016/j.pedn.2015.02.005>
- Chao, M., Shih, C. T., & Hsu, S. F. (2016). Nurse occupational burnout and patient-rated quality of care: The boundary conditions of emotional intelligence and demographic profiles. *Japan Journal of Nursing Science*, 13(1), 156–165. <https://doi.org/10.1111/jjns.12100>
- Chen, F., Leng, Y., Zhang, L. I., Xu, J., Zhang, D., Qin, Y. U., Li, J., & Zheng, Y. (2020). The correlation of symptom clusters and functional performance in adult acute leukemia patients under chemotherapy. *Cancer Nursing*, 44(5), E287–E295. <https://doi.org/10.1097/NCC.0000000000000816>
- Chinese - Simplified (ProQOL 5). (2009). Retrieved from <https://proqol.org/proqol-measure>
- Christodoulou-Fella, M., Middleton, N., Papatheanassoglou, E. D. E., & Karanikola, M. N. K. (2017). Exploration of the association between nurses' moral distress and secondary traumatic stress syndrome: Implications for patient safety in mental health services. *BioMed Research International*, 2017, 1908712. <https://doi.org/10.1155/2017/1908712>
- Clayton, M. F., Iacob, E., Reblin, M., & Ellington, L. (2019). Hospice nurse identification of comfortable and difficult discussion topics: Associations among self-perceived communication effectiveness, nursing stress, life events, and burnout. *Patient Education and Counseling*, 102(10), 1793–1801. <https://doi.org/10.1016/j.pec.2019.06.013>
- Coetzee, S. K., & Klopper, H. C. (2010). Compassion fatigue within nursing practice: A concept analysis. *Nursing & Health Sciences*, 12(2), 235–243. <https://doi.org/10.1111/j.1442-2018.2010.00526.x>
- Emold, C., Schneider, N., Meller, I., & Yagil, Y. (2011). Communication skills, working environment and burnout among oncology nurses. *European Journal of Oncology Nursing*, 15(4), 358–363. <https://doi.org/10.1016/j.ejon.2010.08.001>
- Engelbrecht, M., Rau, A., Nel, P., & Wilke, M. (2020). Emotional well-being and work engagement of nurses who moonlight (dual employment) in private hospitals. *International Journal of Nursing Practice*, 26(1), e12783. <https://doi.org/10.1111/ijn.12783>
- Figley, C. R. (1995). Compassion fatigue: Toward a new understanding of the costs of caring. In B. H. Stamm, & A. C. Hudnall (Eds.), *Secondary traumatic stress: Self-care issues for clinicians, researchers, and educators*. The Sidran Press.
- Frampton, S. B., Guastello, S., & Lepore, M. (2013). Compassion as the foundation of patient-centered care: The importance of compassion in action. *Journal of Comparative Effectiveness Research*, 2(5), 443–455. <https://doi.org/10.2217/cer.13.54>
- Fu, C. Y., Yang, M. S., Leung, W., Liu, Y. Y., Huang, H. W., & Wang, R. H. (2018). Associations of professional quality of life and social support with health in clinical nurses. *Journal of Nursing Management*, 26(2), 172–179. <https://doi.org/10.1111/jonm.12530>
- Goetz, J. L., Keltner, D., & Simon-Thomas, E. (2010). Compassion: An evolutionary analysis and empirical review. *Psychological Bulletin*, 136(3), 351–374. <https://doi.org/10.1037/a0018807>
- Gribben, J. L., Kase, S. M., Waldman, E. D., & Weintraub, A. S. (2019). A cross-sectional analysis of compassion fatigue, burnout, and compassion satisfaction in pediatric critical care physicians in the United States. *Pediatric Critical Care Medicine*, 20(3), 213–222. <https://doi.org/10.1097/PCC.0000000000001803>
- Hu, N. C., Chen, J. D., & Cheng, T. J. (2016). The associations between long working hours, physical inactivity, and burnout. *Journal of Occupational and Environmental Medicine*, 58(5), 514–518. <https://doi.org/10.1097/JOM.0000000000000715>
- Hunsaker, S., Chen, H. C., Maughan, D., & Heaston, S. (2015). Factors that influence the development of compassion fatigue, burnout, and compassion satisfaction in emergency department nurses. *Journal of Nursing Scholarship*, 47(2), 186–194. <https://doi.org/10.1111/jnu.12122>
- Jakimowicz, S., Perry, L., & Lewis, J. (2018a). Compassion satisfaction and fatigue: A cross-sectional survey of Australian intensive care nurses. *Australian Critical Care*, 31(6), 396–405. <https://doi.org/10.1016/j.aucc.2017.10.003>
- Jakimowicz, S., Perry, L., & Lewis, J. (2018b). Insights on compassion and patient-centred nursing in intensive care: A constructivist grounded theory. *Journal of Clinical Nursing*, 27(7–8), 1599–1611. <https://doi.org/10.1111/jocn.14231>
- Jang, I., Kim, Y., & Kim, K. (2016). Professionalism and professional quality of life for oncology nurses. *Journal of Clinical Nursing*, 25(19–20), 2835–2845. <https://doi.org/10.1111/jocn.13330>
- Jesse, M. T., Abouljoud, M. S., Hogan, K., & Eshelman, A. (2015). Burnout in transplant nurses. *Progress in Transplantation*, 25(3), 196–202. <https://doi.org/10.7182/pit2015213>
- Karakoc, A., Yilmaz, M., Alcalar, N., Esen, B., Kayabasi, H., & Sit, D. (2016). Burnout syndrome among hemodialysis and peritoneal dialysis nurses. *Iranian Journal of Kidney Diseases*, 10(6), 395–404.
- Kim, K., Han, Y., Kwak, Y., & Kim, J. S. (2015). Professional quality of life and clinical competencies among Korean nurses. *Asian Nursing Research*, 9(3), 200–206. <https://doi.org/10.1016/j.anr.2015.03.002>
- Kim, Y. H., Kim, S. R., Kim, Y. O., Kim, J. Y., Kim, H. K., & Kim, H. Y. (2017). Influence of type D personality on job stress and job satisfaction

- in clinical nurses: The mediating effects of compassion fatigue, burnout, and compassion satisfaction. *Journal of Advanced Nursing*, 73(4), 905–916. <https://doi.org/10.1111/jan.13177>
- Lee, J. S. Y., & Akhtar, S. (2011). Effects of the workplace social context and job content on nurse burnout. *Human Resource Management*, 50(2), 227–245. <https://doi.org/10.1002/hrm.20421>
- Maslach, C., Jackson, S., & Leiter, M. (1996). *Maslach Burnout Inventory Manual*, 3rd ed. Consulting Psychologists Press.
- Maslach, C., Schaufeli, W. B., & Leiter, M. P. (2001). Job burnout. *Annual Review of Psychology*, 52, 397–422. <https://doi.org/10.1146/annurev.psych.52.1.397>
- Meng, H., Bai, S., & Cao, Q. (2021). Risk factors of role stress and professional burnout among nurse anesthetists: A multicenter cross-sectional study. *Japan Journal of Nursing Science*, 18(3), e12413. <https://doi.org/10.1111/jjns.12413>
- Meyer, R. M., Li, A., Klaristenfeld, J., & Gold, J. I. (2015). Pediatric novice nurses: Examining compassion fatigue as a mediator between stress exposure and compassion satisfaction, burnout, and job satisfaction. *Journal of Pediatric Nursing*, 30(1), 174–183. <https://doi.org/10.1016/j.pedn.2013.12.008>
- Miller, K. D., Nogueira, L., Mariotto, A. B., Rowland, J. H., Yabroff, K. R., Alfano, C. M., Jemal, A., Kramer, J. L., & Siegel, R. L. (2019). Cancer treatment and survivorship statistics, 2019. CA: A Cancer Journal for Clinicians, 69(5), 363–385. <https://doi.org/10.3322/caac.21565>
- Ministry of Human Resources and Social Security of the People's Republic of China (2018). *The Labor Law of People's Republic of China*. Retrieved from http://www.mohrss.gov.cn/SYRlzyshshzbz/czf/f/f/f/201601/t20160119_232110.html
- Nantsupawat, A., Nantsupawat, R., Kunaviktikul, W., Turale, S., & Poghosyan, L. (2016). Nurse burnout, nurse-reported quality of care, and patient outcomes in Thai hospitals. *Journal of Nursing Scholarship*, 48(1), 83–90. <https://doi.org/10.1111/jnu.12187>
- Newcomb, R. A., Nipp, R. D., Waldman, L. P., Greer, J. A., Lage, D. E., Hochberg, E. P., Jackson, V. A., Fuh, C.-X., Ryan, D. P., Temel, J. S., & El-Jawahri, A. R. (2020). Symptom burden in patients with cancer who are experiencing unplanned hospitalization. *Cancer*, 126(12), 2924–2933. <https://doi.org/10.1002/cncr.32833>
- Nolte, A. G., Downing, C., Temane, A., & Hastings-Tolsma, M. (2017). Compassion fatigue in nurses: A metasynthesis. *Journal of Clinical Nursing*, 26(23–24), 4364–4378. <https://doi.org/10.1111/jocn.13766>
- O'Callaghan, E. L., Lam, L., Cant, R., & Moss, C. (2020). Compassion satisfaction and compassion fatigue in Australian emergency nurses: A descriptive cross-sectional study. *International Emergency Nursing*, 48, 100785. <https://doi.org/10.1016/j.ienj.2019.06.008>
- Ohue, T., Moriyama, M., & Nakaya, T. (2011). Examination of a cognitive model of stress, burnout, and intention to resign for Japanese nurses. *Japan Journal of Nursing Science*, 8(1), 76–86. <https://doi.org/10.1111/j.1742-7924.2010.00161.x>
- Padilla Fortunatti, C., & Palmeiro-Silva, Y. K. (2017). Effort-reward imbalance and burnout among ICU nursing staff: A cross-sectional study. *Nursing Research*, 66(5), 410–416. <https://doi.org/10.1097/NNR.0000000000000239>
- Page, K., & Graves, N. (2021). A cross sectional study of organizational factors and their impact on job satisfaction and emotional burnout in a group of Australian nurses: Infection control practitioners. *BMC Health Services Research*, 21(1), 441. <https://doi.org/10.1186/s12913-021-06477-2>
- Sacco, T. L., & Copel, L. C. (2018). Compassion satisfaction: A concept analysis in nursing. *Nursing Forum*, 53(1), 76–83. <https://doi.org/10.1111/nuf.12213>
- Sawatzky, J. A., & Enns, C. L. (2012). Exploring the key predictors of re-tenure in emergency nurses. *Journal of Nursing Management*, 20(5), 696–707. <https://doi.org/10.1111/j.1365-2834.2012.01355.x>
- Shang, J., You, L., Ma, C., Altares, D., Sloane, D. M., & Aiken, L. H. (2014). Nurse employment contracts in Chinese hospitals: Impact of inequitable benefit structures on nurse and patient satisfaction. *Human Resources for Health*, 12, 1. <https://doi.org/10.1186/1478-4491-12-1>
- Shen, J., Yu, H., Zhang, Y., & Jiang, A. (2015). Professional quality of life: A cross-sectional survey among Chinese clinical nurses. *Nursing & Health Sciences*, 17(4), 507–515. <https://doi.org/10.1111/nhs.12228>
- Sinclair, S., Raffin-Bouchal, S., Venturato, L., Mijovic-Kondejewski, J., & Smith-MacDonald, L. (2017). Compassion fatigue: A meta-narrative review of the healthcare literature. *International Journal of Nursing Studies*, 69, 9–24. <https://doi.org/10.1016/j.ijnurstu.2017.01.003>
- Stamm, B. H. (2010). *ProQOL Concise Manual, 2nd Edition, November 2010*. Retrieved from <https://proqol.org/proqol-manual>
- Statistics, N. B. o. (2019). *China Health Statistical Yearbook 2019*. Retrieved from www.stats.gov.cn/tjsj/ndsj/indexch.htm
- Su, J. J., Masika, G. M., Paguio, J. T., & Redding, S. R. (2020). Defining compassionate nursing care. *Nursing Ethics*, 27(2), 480–493. <https://doi.org/10.1177/0969733019851546>
- The central people's government of the People's Republic of China. the Nurse Regulations (2008). Retrieved from http://www.gov.cn/zw-gk/2008-02/04/content_882178.htm
- Vahey, D. C., Aiken, L. H., Sloane, D. M., Clarke, S. P., & Vargas, D. (2004). Nurse burnout and patient satisfaction. *Medical Care*, 42(2 Suppl), I157–66. <https://doi.org/10.1097/01.mlr.0000109126.50398.5a>
- Wang, J., Okoli, C. T. C., He, H., Feng, F., Li, J., Zhuang, L., & Lin, M. (2020). Factors associated with compassion satisfaction, burnout, and secondary traumatic stress among Chinese nurses in tertiary hospitals: A cross-sectional study. *International Journal of Nursing Studies*, 102, 103472. <https://doi.org/10.1016/j.ijnurstu.2019.103472>
- Wells-English, D., Giese, J., & Price, J. (2019). Compassion fatigue and satisfaction: Influence on turnover among oncology nurses at an urban cancer center. *Clinical Journal of Oncology Nursing*, 23(5), 487–493. <https://doi.org/10.1188/19.CJON.487-493>
- Wu, S., Singh-Carlson, S., Odell, A., Reynolds, G., & Su, Y. (2016). Compassion fatigue, burnout, and compassion satisfaction among oncology nurses in the United States and Canada. *Oncology Nursing Forum*, 43(4), E161–E169. <https://doi.org/10.1188/16.ONF.E161-E169>
- Yu, H., Jiang, A., & Shen, J. (2016). Prevalence and predictors of compassion fatigue, burnout and compassion satisfaction among oncology nurses: A cross-sectional survey. *International Journal of Nursing Studies*, 57, 28–38. <https://doi.org/10.1016/j.ijnurstu.2016.01.012>

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