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Effect of compassion fatigue on the caring ability of young psychiatric nurses: A dominance analysis and chain mediation model

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Abstract

Aims: The aim of this study is to explore the mechanism by which three factors of compassion fatigue affect caring ability in young psychiatric nurses.

Methods: We used the Professional Quality of Life Scale and Caring Ability Inventory to investigate 309 young nurses in three psychiatric hospitals in Heilongjiang. Dominance analysis and chain mediation model were performed to explore the effects of three factors of compassion fatigue on caring ability.

Results: (1) The three factors of compassion fatigue affected the caring ability of young in the order compassion satisfaction > burnout>secondary traumatic stress by dominance analysis; (2) burnout played a partially mediating effect between compassion satisfaction and caring ability; and (3) secondary traumatic stress and burnout had a chain mediating effect between compassion satisfaction and caring ability.

Conclusions: Higher levels of compassion satisfaction had the strongest impact on the caring ability of young psychiatric nurses which could be mediated via burnout and secondary traumatic stress. No patient or public contribution.

KEYWORDS
burnout, caring ability, compassion fatigue, compassion satisfaction, secondary traumatic stress, young psychiatric nurses

1 | INTRODUCTION

Caring is an essential component of nursing and the foundation of the nurse–patient relationship (Watson & Jean, 2009). Caring ability (CA) can be described as the nurse's ability to express caring attitudes and build supportive relationships with patients. Nurses with an improved CA can reduce patients' psychological stress and improve their coping skills and satisfaction (King et al., 2019). Psychiatric nurses, as one of the special groups in hospitals, provide services to patients with unexpected incidents such as assaults and suicidal self-inflicted injuries. And studies have demonstrated that psychiatric nurses lacked CA (Huimin et al., 2020), with their CA lower than that of nurses in general hospitals (Qing et al., 2018; Xu et al., 2021). The organization hardly provide humanistic training courses for nurses and the majority of nurses are mainly dedicated to clinical work, neglecting the importance of CA. Empathy is defined as the ability to recognize others' emotions, express understanding toward others' experiences, and respond appropriately (Stepien & Baernstein, 2006). As patients are often in difficult situations and experience painful or negative emotions, nurses who are

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involved in the care of these patients for long periods may also experience mental health problems. A cross-sectional study suggested that empathy may affect nursing students' CA (Wang et al., 2020). Empathy is an essential factor in improving CA in nurses, too (Ke et al., 2022). Therefore, nurses with high levels of empathy will have a deep understanding of patients' needs and the quality of care will improve. However, nurses often experience job stress, burnout, and secondary trauma at their workplace, such as patient death and violence, which are usually beyond their control (Yilmaz et al., 2018). Therefore, they undergo high levels of psychological distress, leading to work-related problems and reduced quality of care (Ghawadra et al., 2019). In summary, it is important to improve the empathy of nurses and reduce their compassion fatigue for better quality of care.

Moreover, the problems encountered by nurses in their work environment can negatively affect their professional quality of life (Choi & Lee, 2017). The professional quality of life consists of three factors, namely compassion satisfaction (CS), secondary traumatic stress (STS), and burnout (BO). CS is a positive factor, whereas BO and STS are negative factors, which together represent compassion fatigue (CF). CF is defined as emotional exhaustion resulting from the stress of long-term, continuous, and close interaction with patients, which can be considered the "cost of care" (Hunsaker et al., 2015; Stamm, 2010). CF can cause emotional disturbances, physical exhaustion, cognitive errors, and behavioural abnormalities in aid workers, causing them to need help themselves. Studies have confirmed that the constraints experienced in their work environment affect their physical and mental health, with a significant positive correlation between psychological distress and CF (Barnett & Ruiz, 2018; Hegney et al., 2015). In addition, increased incidences of headaches and sleep problems were observed among nurses with CF (Ismail et al., 2019). A poor work environment may lead to CF among nurses. CS is a sense of accomplishment that can counteract the negative emotional problems faced during work and help maintain CA among nurses (Delgado et al., 2017; Jarrad & Hammad, 2020). One study reported that young nurses lacked experience, which made them vulnerable to CF and caused them to have low CS (O'Mahony et al., 2018).

As nurses, in China, have less opportunity to care for psychiatric patients during their student period, young psychiatric nurses may have less ability to cope with potentially traumatic events. Although these traumatic experiences may hardly detected by nurses, they may have accumulated effects in their mind, which aggravate STS and lead to BO. Additionally, it still pays less attention to the CF experience of young nurses after work, even though the organization has arranged pre-job training. The negative impact of CF on the CA for nurses can also cause a noticeable decrease in the quality of care, such as longer hospital stays for patients (Chuanru et al., 2022; Steinheiser et al., 2020). However, empirical studies specifically addressing the interplay between these factors are lacking.

It is imperative to determine the impact of the three factors of CF on CA. This will certainly greatly help to understand and improve the CA of nurses. This study used dominance analysis to determine the importance ranking of the three factors. Dominance analysis is a new method for determining the essential predictor variables in a regression model (Budescu, 1993). The major advantage is that it compares the relative importance of each predictor variable, explaining the dependent variable for all sub-models derived from the full model (Baoguo & Lirong, 2006). It overcomes the model-dependent drawback, that is, the relative importance among predictor variables may change with sub-models. Moreover, with full dominance, the extent of importance can be expressed using the total average contribution of each predictor variable in the percentage of the known variance. This enables an intuitive and accurate relationship between the predictor variables (Suh et al., 1998).

One of the ideal characteristics of a nurse is compassion. However, compassion may increase the risk of STS among nurses (Mohammadi et al., 2017). The Compassion Stress and Fatigue Model stated that enhancing the sense of achievement, that is, CS, will reduce CF (Figley, 2002). When nurses receive positive feedback from patients, their CS is boosted. However, CS can be influenced by people or events in the work environment, which results in nurses' failure to separate from their patients' distressing experiences, leading to CF (Newham et al., 2019; Sacco et al., 2015). The Gentry Compassion Fatigue Model suggested that interactions or a synergistic effect may occur among direct traumatic stress, STS, and BO in helpers. These can potentially diminish the resilience of helpers. Simultaneously, it can lower the threshold of perception for the other two harmful effects, entailing the rapid onset of CF in a short duration and weakening helpers' ability to help (Gentry, 2002; Min, 2019). Accordingly, we hypothesized that STS and BO in young psychiatric nurses weaken CS, and CS may also weaken through a superimposed effect, ultimately reducing CA.

In summary, this study focused on the relationship between CA and CF in young psychiatric nurses. Dominance analysis was used to examine the predictive power of CS, STS, and BO on CA and to rank their importance. Furthermore, we applied a chain mediation model to validate the relationship across variables and offer insights to reduce CF and improve CA.

2 | METHODS

2.1 | Designs

A cross-sectional study was used in this study in order to find out the effect of CF and CS on CA in young psychiatric nurses and the relationship between the above variables.

2.2 | Sample

The sample size was estimated by 10 to 20 times of the independent variables. This study consisted of 13 variables, and the sample size could be taken as 130 to 260 cases. A total of 320 questionnaires were finally distributed considering the invalidity of questionnaire.

The inclusion criteria were as follows: (1) age ≤ 35 years; (2) holding a nursing licence; and (3) continuous clinical nursing work experience in psychiatry for ≥6 months. (4) The workplace is the semi-closed ward of the inpatient unit. The exclusion criteria were vocational and trainee nurses.

2.3 | Instruments

2.3.1 | Demographic sociological questionnaire

According to the purpose, we designed a questionnaire for obtaining demographic sociological information, such as sex, age, years of work, education, and marital status.

2.3.2 | Professional quality of life scale

The scale was developed by Stamm and is mainly applicable to psychologists, nurses, chaplains, police officers, rescue workers, etc. Each factor consists of 10 items, that is, 30 items in total, with CS representing a positive trend and BO and STS representing negative trends. The scale was scored on a 5-point Likert scale. The threshold values for the total scores of the three subscales were < 33, ≥26, and ≥ 17, respectively. Among them, the total score of all three subscales exceeded the threshold, considered severe. The score of one factor exceeding the threshold indicated mild CF, and two factors exceeding the threshold indicated moderate CF. Cronbach's α for the total study is 0.9, and S-CVI is 0.87.

2.3.3 | Caring ability inventory

The caring ability inventory (CAI) scale is one of the most widespread assessment tools to evaluate CA. The scale, which was developed by Professor Nkongho, contains 37 items with 13 reverse items, divided into three dimensions: cognition, courage, and patience. The scale is based on a 7-point Likert scale (7 for "completely agree" and 1 for "completely disagree"), with higher scores indicating better CA. The CA was divided into high, medium, and low levels based on whether the total score of CAI is <203.1, 203.1–220.3, or > 220.3, respectively (Wang et al., 2022). Cronbach's α for the total study is 0.832, and S-CVI is 0.932.

2.3.4 | Data selection

These nurses were recruited between May and July 2021. Before data collection, eligible nurses were contacted and provided with an information sheet. Nurses who provided informed consent were asked to complete an online survey. The survey was administered using a uniform statement that explained the purpose and methods. Nurses were assured that participation in the study was voluntary and anonymous. A total of 320 questionnaires were provided, and 309 filled questionnaires were returned, indicating a return rate of 96.5%.

2.3.5 | Ethical considerations

This is an observational study. The Ethics Committee has confirmed that no Research Ethic Committee approval is required but this study was approved by the participating hospitals. Written informed consent was obtained from all participants.

2.3.6 | Statistics

SPSS 25.0 was used as data processing software. A correlation analysis was used to explore the correlation between CF and CA. We applied dominance analysis to explore the relative importance of CS, STS, and BO in predicting CA among young psychiatric nurses. The steps of dominance analysis were as follows: (1) a multiple linear regression analysis was used to determine the best regression model (full model) that could predict CA, and all possible sub-models were used (the number of sub-models was 2p-1; p: the number of predictor variables in the full model). (2) Hierarchical regression was used to calculate the value-added contribution (R^2) of each predictor variable in the full model by adding each sub-model without its own variables. The R^2 is compared in pairs when both sides of ΔR^2 are non-null, and the final relationship between the predictor variables is obtained. (3) The total average contribution of the independent variables and the percentage of the full model coefficients were calculated. Specifically, dominance analysis has three levels from high to low, namely full dominance, conditional dominance, and overall dominance. If the importance sequence of the independent variable was constant in the sub-model, it was the result of dominance analysis. Finally, we observed that the dominance relationship between the independent variables was based on the average contribution. Conversely, if the importance series of the independent variables were not constant in the sub-model, the R^2 changes had to be ranked given the total average contribution. Finally, the chain mediation model was validated with the application of Model 6 in the process macro. If the 95% confidence interval did not contain 0, it indicated that the mediation effect holds. According to the Harman test, the first common factor variance contribution was <40%, indicating that no significant common method bias exists (Hongxing et al., 2012).

3 | RESULTS

3.1 | Sociodemographics for nurses

Data were collected from 309 young psychiatric nurses, 59.1% of whom were professional training college; 57.4% with moderate levels of CF and above, as shown in Table 1.

TABLE 1 Sociodemographics of nurses ($n = 309$).

Variables	N (%)	Variables	N (%)
Age		Education	
18–25	180 (58.4%)	Secondary School	83 (26.9%)
25–35	128 (41.6%)	Professional training college	182 (59.1%)
Working years		Bachelor's degree and above	43 (14%)
0.5–1	105 (34.1%)	Monthly income	
1–5	156 (50.6%)	2000-3999RMB	224 (72.7%)
6–10	30 (9.7%)	4000-5999RMB	78 (25.3%)
>10	17 (5.5%)	6000-7999RMB	5 (1.6%)
Gender		>8000RMB	1 (0.3%)
Male	149 (48.4%)	Working hours	
Female	159 (51.6%)	<8 h	58 (18.8%)
Marriage		≥8 h	250 (81.2%)
In marriage	56 (18.2%)	Sleeping time	
Divorced	3 (1%)	<6 h	161 (52.3%)
Singer	150 (48.7%)	≥6 h	147 (47.7%)
Others	99 (32.1%)	Compassion Fatigue	
Had children		None	47 (15.3%)
Yes	40 (13%)	Low	84 (27.3%)
No	268 (87%)	Moderate	82 (26.6%)
Employment		High	95 (30.8%)
Formal workers	28 (9.1%)		
Temporary workers	280 (90.9%)		

TABLE 2 Correlation between ProQOL and CAI.

	CS	STS	BO	CA
CS	1			
STS	0.073	1		
BO	−0.667**	0.310**	1	
CA	0.536**	−0.271**	−0.550**	1

Abbreviation: BO, burnout; CA, caring ability; CS, compassion satisfaction; STS, secondary traumatic stress.

**$p<0.01$.

3.2 | Correlation analysis between CF and CA

The CA score of young psychiatric nurses was 174.97 ± 26.323. Both total and dimensional scores were significantly lower than the international norm. In addition, this study revealed significant correlations of CA with each of the factors of CF, where STS and BO were negatively correlated and CS was positively correlated with CA (all $p < 0.05$; Table 2).

3.3 | Dominance analysis between CF and CA

To further explore the effects of the three factors on CA, dominance analysis was conducted, and the results are presented in Table 3. This study revealed that CS, STS, and BO affect CA, where CS affects the most, accounting for 58.6% of the effect. Thus, CS had the greatest predictive power on CA, considered a core indicator of CA in the follow-up study.

3.4 | Mechanism by which BO and STS in CF affect CA

From the "generalized mediation analysis", although the correlation between STS and CA was not significant, the "masking effect" cannot be excluded. When the total effect was masked, both the indirect and direct effects had opposite outcomes. Therefore, further mediating effects tests must be conducted. In this study, we used PROCESS (model 6) and Bootstrap 5000 to estimate the significance of the effects. We tested the mediation and masking effects of BO and STS between CS and CA. The results demonstrated a significant mediation effect of BO and chain mediation effect of BO and STS with 95% confidence intervals of [0.101, 0.614] and [0.157, 0.465], respectively. A masking effect of STS on CS and CA was observed, with a 95% confidence interval of [−0.546, −0.184], which accounts for 52.66% of the direct effect (|ab/c | ≈ 0.287; Tables 4 and 5).

4 | DISCUSSION

Our study showed that the CA score (174.97 ± 26.323) and all dimension scores were lower than normal (Simmons & Cavanaugh, 2000).

TABLE 3 Dominance matrix of compassion fatigue on caring ability ($n = 309$)

Subset model	R^2	Additional contribution (ΔR^2)		
		X_1	X_2	X_3
K = 0, Direct effect average	0.000	0.287	0.073	0.303
X_1	0.073	—	0.097	0.067
X_2	0.287	0.310	—	0.240
X_3	0.303	0.051	0.011	—
K = 1, Partial effect average	—	0.181	0.054	0.154
X_1X_2	0.384	—	—	0.015
X_1X_3	0.354	—	0.045	—
X_2X_3	0.314	0.085	—	—
K = 2, Total effect average	—	0.085	0.045	0.015
$X_1X_2X_3$	0.399		—	—
Overall average	—	0.234	0.057	0.157
Percent of total Variance explained	—	58.6	14.4	39.4

Note: X1: compassion satisfaction; X2: secondary traumatic stress; X3: burnout; The column labelled R^2 represents the variance in the outcome explained by the model appearing in the corresponding row. Columns labelled Xi contain the additional contributions to the explained variance gained by adding the column variable (Xi) to the row model. Blank cells indicate that data are not applicable.

TABLE 4 Compassionate satisfaction and caring ability: mediating effect analysis &model fitting.

Dependent variable	Independent variable	R^2	F	β	t	*p*
CA	CS	0.399	67.292	1.207	6.565	<0.001
	BO			−1.034	−2.791	0.006
	STS			−0.991	−4.773	<0.001
STS	CS	0.238	47.566	0.35	7.521	<0.001
	BO			0.863	9.643	<0.001
BO	CS	0.445	245.248	−0.347	−15.66	<0.001

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

TABLE 5 Compassionate satisfaction and caring ability: Significance test of mediating effect & effect size.

	Effect	Bootstrap SE	Bootstrap 95% CI	
			Low	High
Total Indirect Effect	0.309	0.146	0.018	0.582
CS->BO->CA	0.359	0.133	0.101	0.614
CS->STS->CA	−0.347	0.094	−0.546	−0.184
CS->BO->STS->CA	0.297	0.078	0.157	0.465
Direct Effect	1.207	0.184	0.845	1.568
Total Effect	1.515	0.137	1.247	1.784

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

They were weaker than in psychiatric hospital nurses and even lower than in general hospital nurses (Qing et al., 2018; Xu et al., 2021). Thus, the CA of young psychiatric nurses is not optimistic and needs further attention, which may be due to the following reasons: (1) humanistic care education in China started late; (2) nursing humanities courses account for a small proportion of total hours, and nurses lack systematic training in humanistic care; and (3) clinical care in China tends to be technical, with a lack of human resources, which leads to burdening of young nurses with overwork, contributing to CA reduction. In addition, psychiatric departments are mostly semi-closed wards, and nurses are exposed to patients with disorders of thinking, consciousness, or perception for a long time, causing high psychological stress. In particular, young nurses' professional values are not yet established completely, and if they do not receive

understanding from patients or experience physical or verbal harm, they might lose interest in patient care. This long-term adverse emotional experience will affect nurses' passion to work and their observation and nursing behaviour at work.

Our results indicated that nurses with high CF had low CA. Communicating with patients may be difficult owing to the characteristics of mental illness. Good communication skills help young nurses tackle different diseases and symptoms of patients (Kim & Sim, 2020). The high risk of CF among young nurses may be due to their misconceptions regarding the perceptions and attitudes of patients with mental illnesses and their failure to realize that patients need increased humanistic care (Marshman et al., 2021). This will undoubtedly lead to a decrease in their CA, consistent with our study. In addition, young nurses have to attend to not only their jobs but also other social duties. If they are not able to cope with the transition between their roles, stress is bound to occur.

Compassion is one of the essential elements for nurses to make patients feel understood and to promote self-disclosure (Moghaddasian et al., 2013). In addition, it can enhance patient satisfaction and adherence, which in turn promotes patient health (J. C. Watson et al., 2014). However, the high risk, high effort, low reward of psychiatric nursing and social prejudice make it difficult for them to feel valued and have professional satisfaction. Because of the characteristics of mental illnesses and the high relapse rate, they witness many patients under their care with repeated admissions. This leads to reduced job fulfilment and even fosters emotional exhaustion, producing CF that can have a series of physical, social, and emotional negative effects on psychiatric nurses (Duarte & Pinto-Gouveia, 2017). We observed that CA gradually decreased with progressive CF, but CS was positively correlated with CA ($p < 0.01$). Furthermore, dominance analysis indicated that the overall strength of the three factors of CF on CA was in the order CS > BO > STS. Dominance analysis revealed that the largest contributor of CA is CS, 58.6%, suggesting that although nurses are a high-risk group for CF (Hegney et al., 2014), they feel a sense of accomplishment owing to the nature of their work, which significantly increases their CA. Individuals with high levels of CS were found to have potential internal resources to protect themselves from patient trauma and work stress (Hegney et al., 2015). Furthermore, helpers experience both positive and negative emotions at work, where the components and proportions of both are constantly changing (Fredrickson & Losada, 2005). When the proportion of positive experiences is enough to outweigh the negative experiences, helpers have increased work motivation, and the services they provide will be of high quality.

BO refers to a sense of lowered personal professional fulfilment caused by emotional or physical fatigue. STS may occur due to nurses' indirect exposure to traumatic events of others in the workplace (Lee et al., 2013; Morrison & Joy, 2016). Correlation analysis showed a significant negative correlation between BO and STS with CA ($r = -0.271, -0.550$, $p < 0.01$) in young psychiatric nurses. Thus, CA gradually decreases as CF level increases. STS and BO played different roles: (1) BO had a partially mediating effect and (2) STS had a masking effect. This may have occurred because although psychiatric nurses received positive feedback in caring for patients, incidents such as violence, verbal aggressive behaviour, and other events may have caused traumatic memories. Although satisfaction was achieved, negative incidents affected nurses physically and mentally, which led to STS. In addition, some nursing managers may neglect the impact of traumatic events on nurses because they feel that nurses should be able to cope with all the demands of the job. Their CA is gradually reduced as the number of negative events increases. BO is negatively correlated with their total CA score ($p < 0.01$), indicating that reducing nurses' BO is conducive to CA development. CS in emergency nurses can cause negative psychological emotions through the negative effect of BO (Yu & Gui, 2021). BO and STS, as negative components, jointly increase CF risk (Xie et al., 2021). BO can further reduce CS and thus decrease CA in young psychiatric nurses through STS. Therefore, reducing BO is a target point for our future interventions.

5 | LIMITATIONS

This study initially validated the hypothesized associations, influences, and consequences between CF, CS, and CA. However, this study has some limitations. First, this cross-sectional survey was conducted in Heilongjiang, China, which may limit the extension of these results to other populations. The cross-sectional study does not allow for the detection of possible changes in the levels of CF and CA in each participant over time. In addition, data in this study were collected from participants by using self-report measures, and these data may not reflect their true feelings. We also need to consider, obviously, the impact of the pandemic on nurses. The pandemic may have restricted the activities of the young nurses because of the strict anti-pandemic policy, which may have contributed to the emotional problems. However, whether the CA of young nurses will be impacted by CF and CS has to be verified again after the pandemic.

6 | CONCLUSIONS

In this study, the relationship among CA, CF, and CS in young psychiatric nurses was preliminarily demonstrated by dominance analysis. Three factors of CF showed an overall dominance on CA, with CS accounting for the highest impact. Further analysis of the mechanisms of action between CS and CA revealed mediating and masking effects of BO and STS, respectively. Therefore, further attention must be given to the negative effects of BO and STS on the effects of CS.

Implications for nursing management

Reducing CF might be a good way to improve the CA of young nurses, based on our results. Nurse managers can integrate psychological

intervention courses as a formal training component of the nurses' training sessions so that more nurses are equipped with these self-stress reduction management skills. Meta-analysis suggested that psychological interventions such as mindfulness and group painting therapy can be useful in increasing CS and reducing BO and STS (Wanqing et al., 2022). We might try to apply these psychological interventions to reduce nurses' CF. First, we can assess the traumatic experiences of nurses by analysing the paintings the nurses have created to assist them to regulate their psychological crises and reduce CF. Second, we can also use mindfulness therapy as an additional treatment for CF, so that young nurses can understand their own thoughts, emotions and physical sensations, which helps them to release stress. In addition, information technology can also be used to provide young nurses with tips on mental health and CA through different media, such as micro-videos and apps. The organization needs to make young nurses feel a sense of meaning, value and connectedness in the nursing team, which can lead to a higher level organizational spirituality. Additional intervention studies on building harmonious nurse–patient relationships and working cultures are needed in the future.

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AUTHOR CONTRIBUTIONS

WY is responsible for writing the article; Szc, LWT and CAX are responsible for data collection; Lyl is responsible for the design of the subject.

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CONFLICT OF INTEREST STATEMENT

The authors declare no conflicts of interest.

DATA AVAILABILITY STATEMENT

Due to the nature of this research, participants of this study did not agree for their data to be shared publicly, so supporting data is not available.

ETHICAL APPROVAL

This is an observational study. The JiaXing University Ethics Committee has confirmed that no ethical approval is required.

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