

RESEARCH ARTICLE

Influencing factors of burnout and its dimensions among mental health workers during the COVID-19 pandemic

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Abstract**Aim:** To examine the demographic and work characteristics of mental health workers associated with burnout during the COVID-19 epidemic and to examine the relationship between burnout and humanistic care ability.**Design:** Online cross-sectional design.**Methods:** 270 mental health workers in Chongqing, China, were recruited via WeChat from 1 to 31 December 2020. Online self-administered questionnaires were used to collect data. Data were analyzed by *t*-tests and one-way analyses of variance, Pearson's correlation analysis, and multiple linear regression analysis.**Results:** During the COVID-19 pandemic, mental health workers had a high prevalence of burnout and a low level of humanistic care ability. Work factors including profession, work shift, work pressure, work-family conflict, practice environment satisfaction, salary satisfaction, and humanistic care ability were significantly associated with burnout and its subdimension.**KEYWORDS**

burnout, COVID-19, depersonalization, emotional exhaustion, humanistic care ability, mental health workers, personal accomplishment

1 | INTRODUCTION

From January 2020, a novel coronavirus (COVID-19) spread rapidly to countries throughout the world. It became a major global problem, in such a way that on 30 January 2020 the World Health Organization designated the COVID-2019 outbreak as a "public health emergency of international concern" (PHEIC) because of its rapid spread and serious health outcomes (WHO, 2020). Numerous researches around the world have found that this large-scale public health challenge has caused varying levels of psychological problems among different populations (Hewson et al., 2020; Liu et al., 2020; Rossi et al., 2020; Sun et al., 2021). A meta-analysis (Deng et al., 2021) also found that the mental health of the general

population tends to deteriorate after the peak of the epidemic. Message by United Nations Secretary-General António Guterres on COVID-19 and the Need for Action on Mental Health also pointed out that the new crown pneumonia epidemic may cause more and more serious mental health problems, and mental and psychological rehabilitation work in the post-epidemic era cannot be delayed (Guterres, 2020). Undoubtedly, the demand for mental health services will increase. Additionally, the impact of poor mental health (Northwood et al., 2021), and the particular work environment and processes during the pandemic (Liberati et al., 2021) may lead mental health workers to experience more and complex challenges, such as high work pressure, especially in the post-pandemic era, which may cause or exacerbate burnout. For example, a cross-sectional

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study of mental health workers in the UK during the covid-19 pandemic found that survey respondents reported high levels of burnout (Pappa et al., 2021). It is worth noting that the factors mentioned above, but not limited to, may further interfere with the humanistic spirit and practice of mental health workers and whether the effects may also contribute to burnout.

2 | BACKGROUND

Burnout is a significant public health issue that has drawn worldwide attention, was first used in the clinical setting in 1974 by the psychologist Herbert Freudenberger (Freudenberger, 1974). He described burnout as a “state of mental and physical exhaustion caused by one's professional life” seen predominately in human service workers. Later on, Maslach et al. defined it as a psychological syndrome related to the work situation, which is characterized by three dimensions of constructs, namely, emotional exhaustion (EE)—an individual's excessive consumption of emotional resources under long-term stressor stimulation, depersonalization (DP)—an individual's perfunctory and negative attitudes towards work and work objects, and reduced personal accomplishment (RPA)—a person's negative evaluation of oneself, especially when it comes to working with customers (Maslach & Jackson, 1981). According to the latest World Health Organization's International Disease Classification (ICD-11), burnout as an occupational phenomenon has been officially classified as an occupational health syndrome (WHO, 2019).

Burnout can be found in many disciplines and levels of health-care professionals. Among them, work in the field of mental health is fraught with some specific and unique stressors, such as “associative stigma” (Chang et al., 2019), higher frequency of violence (Renwick et al., 2016), nature of emotional needs (Scanlan & Still, 2019), potentially high suicide risk (Hagen et al., 2017), and underfunding for mental health services (Johnson et al., 2018), burnout was higher than in other hospital settings (Totman et al., 2011), with prevalence rates ranging from 21% to 67% (Morse et al., 2012). Meanwhile, the outbreak of COVID-19 presents new challenges. A qualitative study of experiences of mental health workers during the COVID-19 pandemic (Liberati et al., 2021) found that they faced multiple forms of stress, ranging from trauma stress, anxiety associated with unusual and highly demanding working conditions, and new practices, fatigue, and moral injury. Participants also noted that they were deprived of usual forms of social and professional support. Additionally, Joshi and Sharma (Joshi & Sharma, 2020) also underlined some stressors among mental health practitioners during COVID-19, such as work overload, restricted work environment, emotional contagion, perceived stress, compassion fatigue, poor therapeutic effectiveness, and longer duration of therapy. As a result, mental health practitioners are at increased risk of burnout.

Burnout is dangerous to medical staff, patients, and healthcare institutions, leading to physical or mental illness, medical errors,

poor quality of care, turnover intention, and increased organizational costs (Han et al., 2019; Johnson et al., 2018; Salvagioni et al., 2017; Scanlan & Still, 2019), requiring early identification and intervention. However, mental health workers' needs to release emotional and physical tensions are easily ignored, and they often fail to seek adequate help for themselves, possibly out of the faulty belief that as experts they should deal with their problems on their own (Kar & Singh, 2020). Moreover, long stimulated by these stressors, mental health workers may be tired of their daily work and ignore the humanistic care in the process. In a previous study, humanistic care ability was generally low among mental health workers (Zhang et al., 2020).

Humanistic care is the ability to listen to the needs and desires of patients, understand the patient's emotions, and communicate with patients to develop a therapeutic relationship (Rogers, 1981). It emphasizes caring for the “whole person,” that is, knowing the physical, cognitive, psychological, emotional, social, and spiritual dimensions of a person, as compared with the narrow focus on the physical elements of disease that often dominates medical practice (Lee Roze des Ordon et al., 2018). Nkongho developed the Caring Ability Inventory (CAI) to measure it in three dimensions: cognition is the level of understanding of self and the person cared for; courage is defined as the ability to deal with the unknown in caring, and patience is tolerance and persistence (Xu et al., 2020). Medical staffs with higher humanistic care ability are able to provide effective clinical practice and offer high quality of care in hospitals, which contributes to improve on metrics such as higher patients satisfaction, less work pressure, and more harmonious doctor-patient relationship (Raja et al., 2015). Notably, these metrics mentioned above are also preventive factors for burnout. In addition, work-life balance was an important aspect of sustaining humanism (Chou et al., 2014), and in a large study of U.S. surgeons (Shanafelt et al., 2012), the prevalence of burnout was 40% less in those who stressed the importance of lifestyle activities and balance. A study of nurses' caring behavior prediction model based on Neuman's System Model indicates that burnout acted as a mediator between two variables (spiritual intelligence, psychological ownership) and caring behaviors (Kaur et al., 2013). Previous studies have focused more on the effects of variables such as psychological capital (Kim & Kweon, 2020), self-esteem (Kupcewicz & Józwick, 2020), mindfulness (Yang et al., 2017), Social capital (Eliacin et al., 2018), and resilience (Delgado et al., 2020) on burnout. However, few studies have focused on the role of humanistic care in the occurrence and development of burnout. Given the high prevalence of burnout in the field of mental health and the need to improve the spirit of humanistic care, further investigation into the relationship between humanism and burnout is warranted.

To sum up, the study aimed to explore the demographic and work characteristics of mental health workers associated with burnout during the covid-19 outbreak, and the relationship between burnout and humanistic care ability.

3 | METHODS

3.1 | Design and participants

An online cross-sectional design was used. The STROBE statement was used to report this study. China's mental health system is mainly divided into three levels: tertiary psychiatric institutions or hospitals (Grade A) provide higher quality care for all types of mental disorders and to all age groups than secondary and primary care facilities; secondary psychiatric institutions or hospitals (Grade B) provide services to people with serious or complex mental disorders; Primary and community mental health care (Grade C) provides care for people with mild to moderate mental disorders mainly by psychiatrically trained general practitioners and physicians. Participants were recruited from psychiatric institutions or hospitals at these three levels in Chongqing, China, using snowball sampling. Inclusion criteria were mental health workers, including doctors, nurses, or technicians, who were older than 18 years, received a professional certificate, and worked for more than one year. Mental health workers who were younger than 18 years, worked less than one year, and were unwilling to participate in this study were excluded. The G*Power 3.1.9.2 program was utilized to estimate the sample size. A minimum sample size of 235 was required to obtain a medium effect size ($f^2 = 0.15$) for linear regression analysis, at a two-sided significance threshold of 0.01 and a power ($1 - \beta$) of 0.95. Based on the 10% dropout rate, the sample size required for the study was at least 259.

3.2 | Measurements

Burnout was assessed with the Chinese version of the Maslach Burnout Inventory-General Survey (MBI-GS) (Li & Shi, 2003), which has three dimensions: EE, DP, and RPA. PA items are reverse scored. Each item was scored on a 7-point Likert scale ranging from 0 (never) to 6 (every day). Referring to the evaluation criteria of Li (Li & Li, 2006), emotional exhaustion >25 , depersonalization >11 , reduced personal accomplishment >16 were taken as the threshold, and divided burnout into zero burnout (all three dimensions are below the critical value), slight burnout (any one dimension is above the critical value), moderate burnout (any two dimensions are above the critical value), and high burnout (all three dimensions are above the critical value). The Cronbach's α in this study was 0.801.

Humanistic care ability was assessed with the Chinese version of the Caring Ability Inventory (CAI) (Juan & Liu, 2008), which has three dimensions: cognition, courage, and patience. Each item was scored on a 7-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree), and courage items were scored in reverse. The higher the total score, the higher the level of humanistic care ability. A score of CAI >220.3 , $220.3-203.1$, and <203.1 indicates high, medium, and low humanistic care ability, respectively. The Cronbach's α in this study was 0.852.

Participants' demographic and work characteristics included age, gender, marital status, education, hospital level, profession, work

years, work shift, work pressure, practice environment satisfaction, salary satisfaction, work-family conflict, the impact of the covid-19 on professional identity, and whether participated in psychological training activities within 3 months.

3.3 | Data collection

In order to avoid face-to-face interaction during the COVID-19 pandemic, an online questionnaire was constructed and distributed to mental health workers via WeChat, one of the most widely used social tools in China. Data were collected from 1 to 31 December 2020. To avoid duplication, each phone IP address could be used only once to visit and complete the survey.

3.4 | Data analysis

SPSS version 25.0 was used to analyze the data. Descriptive statistics are reported as frequency, percentage, mean and standard deviations. Univariate analysis of burnout about categorical variables was examined by *t*-tests and one-way analyses of variance (ANOVAs). Univariate analysis of burnout about humanistic care ability was tested by Pearson's correlation analysis. The Shapiro-Wilk test, normal Q-Q plots, and Levene's test judge the normality and homoscedasticity of data. In the multiple linear regression analyses, the Durbin-Watson test evaluates the autocorrelation between the residuals, homoscedasticity is tested by a scatter plot between studentized residuals (SRE_1) and unstandardized predicted values (PRE_1), normality of data is judged by histogram combined with normal P-P plot, and noncollinearity analysis uses the tolerance and variance inflation factors. The data were tested to be conformed to the premise hypothesis of linear regression analysis. Independent variables with statistical significance ($p < .05$) in the univariate analysis were entered into the multiple linear regression analyses, with burnout and three dimensions as the dependent variables. Statistical significance for all analyses was set to $p < .05$ (2-tailed).

3.5 | Ethical considerations

Ethics approval was granted by the Ethics Committee of the First Affiliated Hospital of Chongqing Medical University (Approval number: 2021-162). Participants were considered informed consent as long as they started filling out the questionnaire.

4 | RESULTS

4.1 | Descriptive characteristics

Of the 298 returned questionnaires, 270 were effective for analysis with an effective return rate of 91%.

TABLE 1 Univariate analysis of burnout in relation to categorical variables

Variables	N(%)	Burnout (Mean [SD])			
		Overall	EE	DP	RPA
<i>Age</i>					
<30	84 (31.1%)	30.77 (12.64)	10.86 (5.05)	6.82 (4.51)	13.10 (6.22)
30–40	130 (48.1%)	33.38 (13.58)	11.54 (5.84)	7.26 (4.68)	14.58 (7.70)
>40	56 (20.7%)	27.46 (12.05) *	10.00 (5.14)	5.21 (4.20) *	12.25 (8.65)
<i>Gender</i>					
Male	67 (24.8%)	32.45 (15.10)	11.27 (5.81)	7.12 (5.14)	14.06 (8.10)
Female	203 (75.2%)	30.98 (12.44)	10.92 (5.38)	6.56 (4.39)	13.49 (7.34)
<i>Marital status</i>					
Unmarried/other	68 (25.2%)	31.04 (14.32)	11.07 (5.72)	6.85 (5.00)	13.12 (7.15)
Married	202 (74.8%)	31.44 (12.75)	10.99 (5.41)	6.65 (4.44)	13.81 (7.65)
<i>Education</i>					
Junior college or lower	70 (25.9%)	28.91 (13.13)	10.13 (5.64)	5.73 (4.62)	13.06 (8.48)
Undergraduate degree or above	200 (74.1%)	32.19 (13.07)	11.32 (5.40)	7.04 (4.53) *	13.84 (7.17)
<i>Hospital level</i>					
Grade A	194 (71.9%)	31.54 (13.18)	10.97 (5.58)	6.73 (4.37)	13.85 (7.40)
Grade B	54 (20%)	28.50 (13.06)	10.93 (5.61)	5.54 (4.67)	12.04 (7.91)
Grade C	22 (8.1%)	36.55 (11.64) *	11.55 (4.33)	9.32 (5.21) *	15.68 (7.23)
<i>Profession</i>					
Nurse	173 (64.1%)	30.06 (12.70) *	10.44 (5.37)	6.35 (4.29) *	13.27 (7.57)
Doctor	83 (30.7%)	34.66 (13.22)	12.13 (5.37)	7.73 (5.05)	14.80 (7.12)
Technician	14 (5.2%)	27.50 (15.10)	11.36 (6.65)	4.93 (4.22)	11.21 (8.79)
<i>Work years</i>					
<6 years	83 (30.7%)	30.52 (12.68)	10.64 (5.09)	6.40 (4.44)	13.48 (6.64)
6–10 years	60 (22.2%)	34.10 (12.99)	12.53 (5.80)	7.98 (4.31)	13.58 (6.78)
11–20 years	78 (28.9%)	32.56 (13.93)	10.94 (5.81)	7.15 (4.99)	14.47 (8.34)
>20 years	49 (18.1%)	27.41 (12.06) *	9.88 (4.88)	4.92 (3.90) *	12.61 (8.45)
<i>Work shift</i>					
Yes	188 (69.6%)	32.51 (13.38) *	11.15 (5.54)	6.96 (4.74)	14.39 (7.22)
No	82 (30.4%)	28.67 (12.24)	10.67 (5.35)	6.10 (4.16)	11.90 (7.95)
<i>Work pressure</i>					
Low	11 (4.1%)	23.36 (14.92)	7.64 (5.48)	4.64 (4.06)	11.09 (10.78)
Medium	139 (51.5%)	28.40 (12.01)	9.17 (4.44)	5.91 (4.25)	13.32 (7.67)
High	120 (44.4%)	35.48 (13.08) *	13.45 (5.60) *	7.81 (4.77) *	14.23 (6.99)
<i>Practice environment satisfaction</i>					
Dissatisfied	73 (27%)	37.04 (15.43) *	13.32 (6.25) *	8.71 (5.18) *	15.01 (7.95)
Neutral	126 (46.7%)	31.10 (10.97)	10.87 (4.84)	6.63 (4.31)	13.59 (6.94)
Satisfied	71 (26.3%)	25.92 (11.81)	8.87 (4.81)	4.75 (3.44)	12.30 (7.91)
<i>Salary satisfaction</i>					
Dissatisfied	91 (33.7%)	35.15 (15.59)	13.05 (6.22)	8.59 (5.31)	13.51 (7.77)
Neutral	135 (50%)	30.16 (11.15)	10.20 (4.56)	6.04 (3.79)	13.91 (7.34)
Satisfied	44 (16.3%)	27.09 (11.39) *	9.25 (5.30) *	4.80 (3.84) *	13.05 (7.68)

TABLE 1 (Continued)

Variables	N(%)	Burnout (Mean [SD])			
		Overall	EE	DP	RPA
<i>Work-family conflict</i>					
Low	79 (29.3%)	25.27 (11.70)	8.49 (4.77)	5.20 (3.60)	11.57 (7.83)
Medium	123 (45.6%)	30.77 (11.55)	10.47 (4.54)	6.29 (4.28)	14.01 (7.51)
High	68 (25.2%)	39.43 (13.43) [*]	14.90 (5.76) [*]	9.18 (5.16) [*]	15.35 (6.70)
<i>Participated in psychological training activities (within 3 months)</i>					
Yes	53 (19.6%)	29.36 (12.68)	9.60 (4.99) [*]	6.28 (4.62)	13.47 (8.26)
No	217 (80.4%)	31.82 (13.23)	11.35 (5.55)	6.80 (4.58)	13.67 (7.35)
<i>Impact of the covid-19 on professional identity</i>					
Positive	165 (61.1%)	30.28 (12.27)	10.60 (5.36)	6.16 (3.99)	13.52 (7.72)
No effect	80 (29.6%)	31.70 (14.30)	11.03 (5.62)	6.91 (5.26)	13.76 (7.29)
Negative	25 (9.3%)	37.20 (13.75) [*]	13.64 (5.29) [*]	9.56 (4.96) [*]	14.00 (7.21)

Abbreviations: DP, depersonalization; EE, emotional exhaustion; RPA, reduced personal accomplishment; SD, standard deviation.

* $p < .05$, ** $p < .01$, *** $p < .001$.

TABLE 2 Descriptive statistics for burnout and humanistic care ability ($n = 270$)

Variables	N(%)	Mean	Std. Deviation
EE		11.01	5.48
<25	267 (98.9%)		
>25	3 (1.1%)		
DP		6.70	4.58
<11	228 (84.4%)		
>11	42 (15.6%)		
RPA		13.63	7.52
<16	155 (57.4%)		
>16	115 (42.6%)		
Burnout		31.34	13.14
Zero burnout	134 (49.6%)		
Slight burnout	114 (42.2%)		
Moderate burnout	20 (7.4%)		
High burnout	2 (0.7%)		
Humanistic care ability		186.79	21.04
Low	215 (79.6%)		
Medium	38 (14.1%)		
High	17 (6.3%)		

Abbreviations: DP, depersonalization; EE, emotional exhaustion; RPA, reduced personal accomplishment.

Overall, the mean (SD) age of the participants was 35.33 (8.21) years old (range: 21–59), and the years of employment ranged from 1 to 41 years, with a mean score of 12.28 (SD 9.10). The majority of participants came from Grade A hospitals (71.9%), were

nurses (64.1%), female (75.2%), were married (74.8%), and had an undergraduate degree or above (74.1%). Most of the participants indicated that they experienced moderate or higher levels of work pressure (95.9%) and work-family conflict (70.8%). Notably, 61.1% of participants expressed that covid-19 had a positive impact on their professional identity. More detailed information about the demographic and work-related characteristics of participants is shown in Table 1.

EE, DP, and RPA scores above the cut-off accounted for 1.1%, 15.6%, and 42.6%, respectively. More than half of mental health workers reported burnout, of which 42.2% reported mild burnout. Most of the mental health workers (79.6%) experienced a low level of humanistic care ability. As shown in Table 2.

4.2 | T-tests or one-way ANOVAs of burnout in relation to categorical variables

Age, hospital level, profession, work years, work shift, work pressure, practice environment satisfaction, salary satisfaction, work-family conflict, and the impact of the covid-19 on professional identity were significantly associated with burnout ($p < .05$). Work pressure, practice environment satisfaction, salary satisfaction, work-family conflict, participation in psychological training activities, and the impact of the covid-19 on professional identity were significantly associated with EE ($p < .05$). Age, education, hospital level, profession, work years, work pressure, practice environment satisfaction, salary satisfaction, work-family conflict, and the impact of the covid-19 on professional identity were significantly associated with DP ($p < .05$). Work shift and work-family conflict were significantly associated with PA ($p < .05$). The above results are shown in Table 1.

Variables	1	2	3	4	5
1 Burnout	1				
2 EE	0.735**	1			
3 DP	0.783**	0.657**	1		
4 RPA	0.735**	0.155*	0.280**	1	
5 Humanistic care ability	-0.625**	-0.352**	-0.518**	-0.521**	1

TABLE 3 Correlation analysis of burnout in relation to humanistic care ability

Abbreviations: DP, depersonalization; EE, emotional exhaustion; RPA, reduced personal accomplishment.

* $p < .05$, ** $p < .01$.

4.3 | Pearson's correlation analysis of burnout in relation to humanistic care ability

As shown in Table 3, the correlation analysis showed that humanistic care ability was significantly associated with burnout (overall: $r = -0.625$, $p < .01$; EE: $r = -0.352$, $p < .01$; DP: $r = -0.518$, $p < .01$; RPA: $r = -0.521$, $p < .01$).

4.4 | Multiple linear regression analysis results, with burnout and three dimensions as the dependent variables

Table 4 demonstrated the results of the multiple linear regression analysis. The model of Burnout had an R^2 of 0.53 and an adjusted R^2 of 0.51. Variables that were significantly associated with increased burnout included experiencing high work pressure ($\beta = 0.145$, $p < .01$) as compared to medium or low; and experiencing more work-family conflict ($\beta = 0.225$, $p < .001$). Variables that were significantly associated with decreased burnout included working as a nurse ($\beta = -0.094$, $p < .05$) as compared to a doctor; having higher practice environment satisfaction ($\beta = -0.104$, $p < .05$) and higher humanistic care ability ($\beta = -0.530$, $p < .001$).

The model of EE had an R^2 of 0.40 and an adjusted R^2 of 0.39. Variables that were significantly associated with increased EE included experiencing high work pressure ($\beta = 0.257$, $p < .001$) as compared to medium or low; and experiencing more work-family conflict ($\beta = 0.288$, $p < .001$). Variables that were significantly associated with decreased EE included experiencing satisfaction with salary ($\beta = -0.125$, $p < .05$) as compared to dissatisfaction; having higher practice environment satisfaction ($\beta = -0.128$, $p < .05$) and humanistic care ability ($\beta = -0.215$, $p < .001$).

The model of DP had an R^2 of 0.42 and an adjusted R^2 of 0.40. Variables that were significantly associated with increased DP included experiencing high work pressure ($\beta = 0.117$, $p < .05$) as compared to medium; and experiencing high work-family conflict ($\beta = 0.161$, $p < .001$) as compared to medium or low; Variables that were significantly associated with decreased DP included experiencing satisfaction with salary ($\beta = -0.116$, $p < .05$) as compared to dissatisfaction; having positive impact of the covid-19 on professional identity ($\beta = -0.103$, $p < .05$) as compared to negative; and having higher humanistic care ability ($\beta = -0.434$, $p < .001$).

The model of RPA had an R^2 of 0.29 and an adjusted R^2 of 0.28. Variables that were significantly associated with decreased RPA included experiencing no work shift ($\beta = -0.107$, $p < .05$) as compared to yes; and having higher humanistic care ability ($\beta = -0.500$, $p < .001$).

5 | DISCUSSION

Although there have been numerous studies investigated mental health problems caused by the COVID-19, only a few have focused on burnout, especially among mental health workers. Our study examined the demographic and work characteristics of mental health workers associated with burnout and also investigated the relationship between burnout and humanistic care ability. The main findings of this study were: (1) more than half of the mental health workers have experienced burnout; (2) their work characteristics were significant predictors of burnout, but demographics were not; and (3) burnout and its sub-dimensions were significantly negatively correlated with humanistic care ability.

Our findings indicated that participants in the study reported a high prevalence of burnout, which is consistent with previous studies (Pappa et al., 2021; Rapisarda et al., 2020). The working environment in psychiatry has changed significantly due to the impact of the pandemic and the measures taken against the virus. Mental health workers face multiple challenges such as work overload, inadequate resources, changed work environment, infection control restrictions, teleworking, or counseling (W. Li et al., 2020; Liberati et al., 2021; Rapisarda et al., 2020), leading to an increased risk of burnout. Evidence suggested that some restrictions during covid-19 may leave hospitalized psychiatric patients feeling isolated, emotional tension, and even more aggression (Liberati et al., 2021), which puts additional pressure on the staff. Because the boundaries between home and work have become blurred, some teleworking employees feel working longer hours and have role conflict (Barriga Medina et al., 2021; Liberati et al., 2021). Sugawara et al. also found the mediating role of work-family conflict in the effect of work pressure on EE (Sugawara et al., 2017). In our study, work pressure and work-family conflict were closely related to burnout and its two dimensions (EE and DP). Furthermore, an especially prominent finding in the study was that mental health professionals faced a variety of moral dilemmas, such as

TABLE 4 Multiple linear regression analysis results, with burnout and three dimensions as the dependent variables

Model	Independent variables	B	SE	β	t	P	95% CI	
							Lower	Upper
Burnout								
	(Constant)	88.985	7.205		12.351	0.000	74.797	103.173
	Age	-0.133	1.448	-0.007	-0.092	0.927	-2.985	2.719
	Hospital level	0.464	0.955	0.022	0.486	0.627	-1.416	2.345
	Professional	-2.266	1.147	-0.094	-1.975	0.049	-4.525	-0.006
	Work years	-0.147	0.948	-0.012	-0.155	0.877	-2.014	1.721
	Work shift	-0.901	1.358	-0.032	-0.664	0.507	-3.575	1.772
	Work pressure	3.344	1.041	0.145	3.211	0.001	1.293	5.395
	Practice environment satisfaction	-1.869	0.865	-0.104	-2.161	0.032	-3.572	-0.166
	Salary satisfaction	-0.309	0.927	-0.016	-0.333	0.739	-2.135	1.517
	Work-family conflict	3.999	0.837	0.225	4.778	0.000	2.351	5.647
	Impact of the epidemic on professional identity	-1.162	0.887	-0.058	-1.310	0.191	-2.909	0.585
	Humanistic care ability	-0.331	0.028	-0.530	-11.793	0.000	-0.386	-0.276
EE								
	(Constant)	15.358	3.223		4.765	0.000	9.011	21.705
	Work pressure	2.417	0.471	0.257	5.136	0.000	1.490	3.344
	Practice environment satisfaction	-0.936	0.388	-0.128	-2.412	0.017	-1.701	-0.172
	Salary satisfaction	-0.974	0.414	-0.125	-2.353	0.019	-1.789	-0.159
	Work-family conflict	2.084	0.375	0.288	5.554	0.000	1.345	2.823
	Participated in psychological training activities (within 3 months)	0.625	0.655	0.047	0.953	0.341	-0.666	1.915
	Impact of the epidemic on professional identity	-0.663	0.401	-0.082	-1.654	0.099	-1.452	0.126
	Humanistic care ability	-0.054	0.013	-0.215	-4.271	0.000	-0.080	-0.029
DP								
	(Constant)	25.635	2.809		9.126	0.000	20.103	31.166
	Age	-0.644	0.552	-0.102	-1.166	0.245	-1.732	0.444
	Education	0.383	0.532	0.037	0.720	0.472	-0.664	1.430
	Hospital level	-0.097	0.372	-0.013	-0.261	0.795	-0.830	0.636
	Professional	-0.430	0.430	-0.052	-1.001	0.318	-1.276	0.416
	Work years	0.088	0.363	0.021	0.241	0.809	-0.626	0.802
	Work pressure	0.929	0.397	0.117	2.339	0.020	0.147	1.711
	Practice environment satisfaction	-0.603	0.329	-0.098	-1.832	0.068	-1.252	0.045
	Salary satisfaction	-0.762	0.353	-0.116	-2.156	0.032	-1.458	-0.066
	Work-family conflict	0.984	0.315	0.161	3.122	0.002	0.363	1.605
	Impact of the epidemic on professional identity	-0.701	0.337	-0.103	-2.079	0.039	-1.365	-0.037
	Humanistic care ability	-0.093	0.011	-0.434	-8.717	0.000	-0.114	-0.072

(Continues)

TABLE 4 (Continued)

Model	Independent variables	B	SE	β	t	P	95% CI	
							Lower	Upper
RPA								
	(Constant)	47.622	4.012		11.870	0.000	39.723	55.521
	Work shift	-1.747	0.855	-0.107	-2.043	0.042	-3.431	-0.063
	Work-family conflict	0.849	0.541	0.083	1.570	0.118	-0.216	1.914
	Humanistic care ability	-0.179	0.019	-0.500	-9.539	0.000	-0.216	-0.142

Abbreviations: CI, confidence interval; DP, depersonalization; EE, emotional exhaustion; RPA, reduced personal accomplishment.

Model performance of Burnout: $R^2 = 0.53$, adjusted $R^2 = 0.51$, $F = 26.12$, $p < .001$.

Model performance of EE: $R^2 = 0.40$, adjusted $R^2 = 0.39$, $F = 24.97$, $p < .001$.

Model performance of DP: $R^2 = 0.42$, adjusted $R^2 = 0.40$, $F = 17.01$, $p < .001$.

Model performance of RPA: $R^2 = 0.29$, adjusted $R^2 = 0.28$, $F = 36.60$, $p < .001$.

restraining or isolating the COVID-19 patients, feeling that they were providing substandard mental healthcare and that service users might experience iatrogenic harm as a result of suspended, withdrawn or otherwise reconfigured care (Liberati et al., 2021). These moral dilemmas can increase their emotional and psychological burden, leading to more severe EE and RPA.

The study noted that professions were correlated with burnout, with doctors most likely to experience burnout than nurses and technicians. This is inconsistent with previous studies in which nurses were generally at higher risk than doctors (Matsuo et al., 2020; Schooley et al., 2016). However, some studies have also reported a similar situation to our findings during the pandemic (Rapisarda et al., 2020). This may be due to the fact that compared with doctors, nurses have a lower social status and lack sufficient professional identity in China (Feng et al., 2017). Professional identity influences one's attitude towards work and clients. This study also demonstrated a significant negative association of professional identity with DP. During the COVID-19 pandemic, medical staff, as the mainstay of the outbreak, fully demonstrated their professional value and showed an unprecedented professional identity, especially for nurses (Li et al., 2021). The positive reports of nurses by the news media have shaped a good professional image, gained wide recognition and praise from the public, and their professional status and influence have been significantly improved (Shang et al., 2021). In addition, in the psychological crisis intervention, nurses, as a member of the multidisciplinary cooperation team, may have a clearer understanding of their role positioning and career development direction (Hyun et al., 2020; Li et al., 2020). This helps nurses to form higher professional values and professional identity, treat their work in a positive state, and be more willing to express their care for patients.

While some studies have stated that demographic variables such as age, gender, marital status, and education were predisposing factors for burnout (Abdelhafiz et al., 2020; Jalili et al., 2021; Kupcewicz & Józwick, 2020; Pappa et al., 2021; Rapisarda et al., 2020), our study failed to fully find such relationship. In the study, univariate analysis showed that only age and education were associated with burnout while gender and marital status did not show a statistically significant

effect. Notably, the correlation between them "disappeared" after considering other influencing factors, similar to the study conducted by Kupcewicz and Józwick (Kupcewicz & Józwick, 2020). We believe that the differences in factors that contribute to burnout across studies may reflect the complex environment of modern healthcare.

Another important finding in this study was that burnout was significantly negatively correlated with humanistic care ability. A qualitative study of surgeons suggests that the high prevalence of burnout can erode humanism (Swendiman et al., 2019). Another study found that humanism can help clinicians reduce burnout (Lee Roze des Ordons et al., 2018). It can be speculated that there may be a bi-directional link between burnout and humanistic care ability, and this study provides new evidence for it. During the pandemic, mental health workers are more prone to burnout at work due to increased workload and stress. In limited time, they might be more inclined to complete only routine work, have no energy to provide additional humanistic care, and establish a closer therapeutic relationship with patients. Most of the participants in this study had low levels of humanistic care ability. Notably, the quality of the therapeutic relationship has a significant impact on the therapeutic outcomes of patients in psychiatric services (Bacha et al., 2020). Poor treatment outcomes for patients are a frustration for mental health workers, affecting their professional identity and personal accomplishment. In this study, we found that mental health workers' humanistic care ability had the most significant effect on RPA, followed by DP and least EE. The study also pointed out that fostering humanism in medicine can significantly improve the sense of personal accomplishment and thus reduce burnout (Menzin et al., 2020).

6 | LIMITATIONS

This study has several limitations. First, due to the cross-sectional design, it is unclear to what extent reported burnout is directly attributable to the pandemic, nor to demonstrate the causal relationship between burnout and humanistic care ability. Second, although we attempted to consider demographic and work characteristic

variables, our study might have failed to address all contributing factors, especially those related to COVID-19. Third, we collected the data from a specific region, the findings may not apply to other territories with a different pandemic situation. A broader sample may reveal differences among different regions of the country or beyond. Fourth, the results may be biased due to the use of an online self-administered questionnaire.

7 | CONCLUSIONS

Our study showed that there was a high prevalence of burnout and a low level of humanistic care ability among mental health workers during the COVID-19 pandemic. Work characteristics, including profession, work shift, work pressure, work-family conflict, practice environment satisfaction, and salary satisfaction, were the influencing factors of burnout or its sub-dimensions. Managers should timely identify and balance the complex challenges in employees' work, particularly work pressure and work-family conflict, to prevent burnout. Adequate staffing and reasonable working hours are required. It is also worth considering to adjust the working hours reasonably according to the special state of employees' life so that they can take into account the family. Furthermore, this study provides new evidence for the bi-directional link between burnout and humanistic care ability, which require equal attention. These findings provide a new direction for managers and individuals to prevent burnout, namely, the cultivation of humanistic care ability. For managers, it is necessary to formulate and implement the relevant policies or norms of humanistic care, such as integrating the humanistic care ability into the clinical ability evaluation index system. In addition, it is equally important to promote theory and practice training in humanistic care to increase the awareness of caring among mental health workers. For individuals, it is necessary to change their cognition, clarify the importance of humanistic care for patients' outcomes and their professional values, and integrate the "patient-centered" service concept and humanistic care into clinical work. It is also a good choice to find and follow the humanistic care role models in clinical work.

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CONFLICT OF INTEREST

None declared.

AUTHOR CONTRIBUTIONS

All authors contributed to the study conception and design. Material preparation, data collection, and analysis were performed by [Hongjin Zhu], [Xiaolin Liu], and [Xiaoyun Yang]. The first draft of the manuscript was written by [Hongjin Zhu], and reviews and modifications of the manuscript were conducted by [Jianrong Zhou] and [Shiqi Xie], and all authors commented on

previous versions of the manuscript. All authors read and approved the final manuscript.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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