ORIGINAL ARTICLE

Gender differences in the experience of burnout and its correlates among Chinese psychiatric nurses during the COVID-19 pandemic: A large-sample nationwide survey

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ABSTRACT: Psychiatric nurses often experience burnout and other mental health symptoms. However, few studies have examined these phenomena and gender-specific associated factors during the COVID-19 pandemic. We surveyed a national sample of psychiatric nurses (N = 8971) from 41 tertiary psychiatric hospitals in China as part of a large national survey conducted during the pandemic. The Maslach Burnout Inventory-Human Service Survey was used to assess burnout and the Depression, Anxiety, and Stress Scale-21 was used to assess mental health symptoms. Binary logistic regression analyses were used to explore factors associated with burnout in the entire sample and separately by gender. The overall prevalence of burnout was 27.27%, with the rate in male psychiatric nurses (32.24%) being significantly higher than that in female psychiatric nurses (25.97%). Many key demographic factors (such as the male gender and marital status), work-related variables (such as a mid-level professional title, having an administrative

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position, longer working hours, more monthly night shifts, and the perceived negative impact of the COVID-19 pandemic on medical work) were significantly associated with burnout in the whole sample. Moreover, burnout was associated with depression, anxiety, and stress symptoms in the whole sample. Gender-specific factors associated with burnout were also identified: burnout was associated with night shifts in male psychiatric nurses, whereas it was associated with single or married marital status, a mid-level professional title, and having an administrative position among female psychiatric nurses. The high rates of burnout and mental health symptoms in psychiatric nurses need attention from hospital administrators. While mental health symptoms, longer working hours, and the perceived impact of COVID-19 are associated with burnout in both genders, gender-specific factors also warrant special attention when developing gender-specific interventions.

KEY WORDS: *burnout, COVID-19 pandemic, gender differences, mental health symptoms, psychiatric nurses.*

BACKGROUND

The outbreak of the coronavirus disease (COVID-19) has affected countries around the world, posing enormous challenges to healthcare workers. Researchers have demonstrated that the COVID-19 pandemic has caused stress, anxiety, depression, and, in some cases, death by suicide among healthcare workers (Young *et al*. 2021; Zeng *et al*. 2021). In addition, a previous study indicated that burnout has been a significant challenge faced by healthcare workers throughout the duration of the pandemic (Alsulimani *et al*. 2021). Burnout is a syndrome characterized by emotional exhaustion, depersonalization, and a reduced sense of personal achievement confined to the work environment (Maslach *et al*. 2001). As burnout is by definition a function of external demands, individuals whose jobs place greater demands likely experience more burnout. Indeed, research reveals that health professionals such as nurses experience particularly high rates of burnout, which can negatively affect the quality of care they deliver, increase their rates of work errors and absenteeism, and reduce patient satisfaction (Poghosyan *et al*. 2010). Furthermore, burnout is associated with increased risk of suicide in the nurses themselves (Tateno *et al*. 2018).

Existing studies conducted with psychiatric nurses have demonstrated that burnout and its components are highly prevalent, though the rates vary across studies. Pertinent to the current study, a meta-analysis of burnout among psychiatric nurses in China showed the following prevalence rates of the three components of burnout: emotional exhaustion (28.1%), depersonalization (25.4%), and low personal achievement (39.7%),

prior to the COVID-19 pandemic (Zeng *et al*. 2020). Another meta-analysis showed that, among psychiatric nurses, the prevalence of the various components of burnout was also high during the COVID-19 pandemic (Galanis *et al*. 2021). Compared to counterparts working in other departments, psychiatric nurses have been found to be more vulnerable to burnout and to lower levels of self-efficacy due to the demands of the profession and occupational characteristics, such as the emotionally demanding nature of their work and a high risk of exposure to workplace violence (Konstantinou *et al*. 2018; Salyers *et al*. 2015).

Given the high prevalence and negative effects of burnout among psychiatric nurses, it is important to examine the factors associated with this syndrome in this high-risk population. Studies have revealed several variables linked to burnout, such as age, physical and psychological symptoms, and work-related factors including work overload, aggression at work, and longer work experience (Kabunga & Okalo 2021; López-López *et al*. 2019). Existing evidence on the relation between gender and burnout is mixed: some studies show higher rates among females than males (Spataro *et al*. 2016), other studies show the opposite pattern (Cañadas-De la Fuente *et al*. 2018), and yet other investigations find no differences (Wang *et al*. 2022). Virtually, no studies have focused on the association between burnout and gender among psychiatric nurses in China. It is critical to do so, given that China is facing a shortage of specialist psychiatric nurses. Alarmingly, the proportion of psychiatric nurses per 100 000 population is only 1.91, which is far below the global average of 12.97 (Huang

et al. 2019). Moreover, information about gender differences is critical to burnout prevention in this population (Lu *et al.* 2020).

To fill this critical gap in the literature, the current study aimed to examine (i) the prevalence and associated factors of burnout among psychiatric nurses during the COVID-19 pandemic; and (ii) gender differences in work-related factors, mental health symptoms, and associated factors of burnout in this high-risk population. Our research questions were as follows. First, we investigate the rate of burnout and mental health symptoms of Chinese psychiatric nurses during the COVID-19 pandemic. Second, we explore gender differences in burnout and mental health symptoms. Third, we examine common factors as well as gender-specific factors associated with burnout. Our findings will provide empirical evidence that informs burnout prevention programming for psychiatric nurses in China, including gender-specific burnout prevention efforts.

METHODS

Study design and participants

This research was part of a national survey conducted from January to March 2021. The national survey focused on mental health services, with goal to improve the quality of healthcare services, the working environment of healthcare workers, and providing valuable guidance for formulating national medical and health policies and optimizing resource allocation. Healthcare workers including psychiatrists, other specialists, nurses, psychologists, and pharmacists working in tertiary psychiatric hospitals across the country were invited to complete an online survey through the official WeChat account of the National Health and Family Planning Commission 'Healthy China'. A total of 10 742 psychiatric nurses from 41 tertiary psychiatric hospitals in 28 provinces were invited to complete an online survey, and 10 069 of them responded to the survey. The response rate was 93.73%. Among them, 8971 completed the survey without logical errors and were included in our final sample. The research protocol was approved by the ethics committee, the approval number was 202002-kyxm-02. All participants consented to participate in the study. The informed consent form was presented to participants before they begin to complete the survey, and starting to complete the survey implies consent.

Measurement

Author-designed questionnaire assessing demographic and work-related characteristics
We used an author-designed questionnaire to collect demographic data (e.g., age, gender, marital status, education level). This questionnaire also assessed work-related factors such as professional title, administrative position, working days per week, working hours per day, monthly night shift, and annual income. In addition, work-related factors pertaining to the COVID-19 pandemic were assessed by the following questions: (i) whether or not they had frontline experience with COVID-19 patients (yes/no); and (ii) their perception of the impact of the COVID-19 pandemic on their work (negative impact: the intention to leave and change careers; neutral impact: no impact on work; positive impact: prefer to be a healthcare worker and love the career more). Before the survey was available to the large sample, a pilot study was conducted in a small sample of about 300 participants including doctors, nurses, psychologists, and pharmacists. Changes were made based on the feedback to ensure that the questionnaire was easy to understand and complete.

Depression, Anxiety, and Stress Scale-21 (DASS-21)
We used the Depression, Anxiety, and Stress Scale–21 (DASS-21; Lovibond & Lovibond 1995) to assess symptoms of depression, anxiety, and stress. The DASS-21 contains 21 items, of which seven items (3, 5, 10, 13, 16, 17, 21) assess depression, seven items (2, 4, 7, 9, 15, 19, 20) measure anxiety, and seven items (1, 6, 8, 11, 12, 14 18) pertain to stress. Each item was rated on a four-point Likert scale, ranging from 0 (*Did not apply to me at all*) to 3 (*Applied to me very much*). The final scores for depression, anxiety, and stress are the sums of the respective seven items multiplied by 2. The cut-off of the three dimensions of the scale was as follows: depression (normal: 0–9, mild: 10–13, moderate: 14–20, severe: 21–27, extremely severe: ≥28); anxiety (normal: 0–7, mild: 8–9, moderate:10–14, severe: 15–19, extremely severe: ≥20); and stress (normal: 0–14, mild: 15–18, moderate: 19–25, severe: 26–33, extremely severe: ≥34). For each subscale, normal and mild symptom levels were grouped together because based on previous studies mild anxiety and depression symptoms were expected regardless of the COVID-19 pandemic, and moderate symptom levels or above were considered clinically significant (Du *et al.* 2020; Tee *et al.* 2020). The reliability and validity of the scale in the Chinese population have been confirmed.

Cronbach's alpha of this scale with the current sample was 0.956.

Maslach Burnout Inventory-Human Service Survey (MBI-HSS)

We used the Maslach Burnout Inventory-Human Service Survey (MBI-HSS; Maslach *et al*. 1996) to assess burnout. This scale includes 22 items, each of which was rated using a seven-point scoring system (0–6), and it has three dimensions: emotional exhaustion (e.g., 'I feel emotionally exhausted because of my work'), depersonalization (e.g., 'I am afraid that my work makes me emotionally harder'), and (low) personal accomplishment (e.g., 'I have achieved many rewarding objectives of my work'). People with high emotional exhaustion (≥27) or depersonalization (≥10) scores are defined as experiencing 'burnout'. Cronbach's alpha for this scale in the current sample was 0.861.

Data analysis

The software SPSS 23.0 (IBM Corporation, Armonk, NY, USA) was used for all analyses. First, descriptive data for the total sample were obtained. Second, the demographic data, work-related factors, mental health symptoms (depression, anxiety, and stress), and three dimensions of burnout (emotional exhaustion, depersonalization, and personal accomplishment) between male and female psychiatric nurses were compared. A normality test for continuous variables showed that the data for all continuous variables were not normally distributed. Thus, the descriptive data for continuous variables were expressed as an interquartile range [median (Q1, Q3)]. To examine gender differences in variables of interest, the Mann–Whitney U test was used for continuous variables, and the chi-square test was used for categorical variables. The binary logistic regression analysis was used to identify significant predictive variables associated with burnout in the whole sample and separately by gender. The two-tailed $P < 0.05$ was considered statistically significant.

RESULTS

Demographics and characteristics of psychiatric nurses

Our final sample of 8971 psychiatric nurses consisted of 1852 male psychiatric nurses and 7119 female psychiatric nurses. The average age among all samples was

[33(29,40)]. The demographic characteristics of the sample are presented in Table 1.

Mental health symptoms and burnout among psychiatric nurses

The prevalence of clinically significant levels of depression, anxiety, and stress symptoms was 17.24%, 24.36%, and 7.28%, respectively, in this sample. The prevalence of burnout in this sample was 27.27%.

Gender differences in demographic, work-related factors, mental health symptoms, and burnout

As shown in Table 1, significant gender differences were found in age, marital status, education level, and professional title (all $P < 0.001$). Male psychiatric nurses had fewer working days per week but more monthly night shifts than did female psychiatric nurses (both $P < 0.001$). The rate of frontline experience with COVID-19 patients was higher in male than in female psychiatric nurses (23.70% vs. 18.53%, $P < 0.001$). Additionally, there was also a significant difference in the perceived impact of COVID-19 on medical work between male and female psychiatric nurses, with male psychiatric nurses disproportionally reporting a high rate of perceived negative impact than female psychiatric nurses ($P < 0.001$). In terms of mental health symptoms, male psychiatric nurses reported a higher prevalence of depression and anxiety than did female psychiatric nurses (depression: 21.81% vs. 16.06%; anxiety: 29.16% vs. 23.11%; all $P < 0.001$). No significant difference in the prevalence of stress was found between the two genders ($P > 0.05$). Finally, in terms of burnout, male psychiatric nurses reported a higher rate of burnout than female psychiatric nurses (32.24% vs. 25.97%, $P < 0.001$). Regarding specific components of burnout, male psychiatric nurses scored significantly higher on two of the three subscales of the MBI-HSS compared to their female counterparts: depersonalization and low personal accomplishment (both $P < 0.001$). No gender difference emerged for levels of emotional exhaustion.

Factors associated with burnout

We first employed a binary logistic regression to examine factors associated with burnout (outcome variable) in the full sample ($N = 8971$). As seen in Table 2, the following emerged as significant predictors of burnout in the

TABLE 1 *Demographic characteristics, work-related factors, mental health symptoms, and burnout in the whole sample and comparisons by gender*

Variables	Total sample (N = 8971)	Males (n = 1852)	Females (n = 7119)	Z/χ^2	P
Age	33 (29.40)	32 (28.37)	34 (29.41)	−10.166	<0.001
Marital status					
Single, n (%)	2010 (22.41)	542 (29.27)	1468 (20.62)	66.264	<0.001
Married, n (%)	6587 (73.42)	1253 (67.66)	5334 (74.93)		
Divorced/widowed n (%)	374 (4.17)	57 (3.07)	317 (4.45)		
Education					
Associate degree or below n (%)	2638 (29.41)	725 (39.15)	1913 (26.87)	106.676	<0.001
Bachelor degree or higher n (%)	6333 (70.59)	1127 (60.85)	5206 (73.13)		
Professional title					
Junior n (%)	5307 (59.16)	1381 (74.57)	3926 (55.15)	262.813	<0.001
Middle n (%)	3061 (34.12)	446 (24.08)	2615 (36.73)		
Senior n (%)	603 (6.72)	25 (1.35)	578 (8.12)		
Administrative position n (yes, %)	586 (6.53)	105 (5.67)	481 (6.76)	2.844	0.092
Working days per week	5 (5.5)	5 (5.5)	5 (5.5)	−3.094	<0.001
Working hours per day	8 (8.8)	8 (8.8)	8 (8.8)	−0.304	0.761
Monthly night shift	4 (0.8)	6 (4.8)	4 (4.7)	−18.898	<0.001
Annual income (Ten thousand RMBs)[†]	10 (7.13)	10 (7.13)	10 (6.13)	−0.408	0.683
Frontline experience with COVID-19 patients					
Yes (%)	1758 (19.60)	439 (23.70)	1319 (18.53)	24.991	<0.001
No (%)	7213 (80.40)	1413 (76.30)	5800 (81.47)		
Perceived impact of COVID-19 on medical work					
Positive (%)	4179 (46.58)	790 (42.66)	3389 (47.60)	46.093	<0.001
Neutral (%)	3721 (41.48)	759 (40.98)	2962 (41.61)		
Negative (%)	1071 (11.94)	303 (16.36)	768 (10.79)		
Burnout n (%)	2446 (27.27)	597 (32.24)	1849 (25.97)	29.066	<0.001
Emotional exhaustion	11 (5.21)	11 (4.22)	11 (5.20)	−0.324	−0.746
Depersonalization	5 (2.9)	5 (2.11)	5 (2.9)	−4.400	<0.001
Personal accomplishment	29 (19.39)	27 (17.37)	30 (20.39)	−5.879	<0.001
Depression n (%)	1547 (17.24)	404 (21.81)	1143 (16.06)	34.152	<0.001
Anxiety n (%)	2185 (24.36)	540 (29.16)	1645 (23.1)	29.202	<0.001
Stress n (%)	653 (7.28)	150 (8.10)	503 (6.29)	2.237	0.127

All continuous variables presented in this table were not normally distributed, the median and interquartile range are presented for each continuous variable in the form of [median (Q1, Q3)].

[†]US dollar to RMB (renminbi) ratio: 1 US dollar ≈6.5 RMB.

entire sample, with male and female psychiatric nurses combined: male (relative to female) gender (OR = 1.177, P = 0.016), single (OR = 1.405, P = 0.033) and married (OR = 1.355, P = 0.036) (relative to divorced/widowed) marital status, middle (relative to junior) professional title (OR = 1.209, P = 0.009), administrative (relative to not administrative) position (OR = 1.278, P = 0.039), longer working hours per day (OR = 1.094, P < 0.001), more monthly night shifts (OR = 1.026, P = 0.001), perceived negative impact (OR = 1.755, P < 0.001) and positive impact (OR = 0.588, P < 0.001) (relative to neutral impact) of COVID-19 on medical work, depression (OR = 2.960, P < 0.001), anxiety (OR = 2.631, P < 0.001), and stress (OR = 3.264, P < 0.001).

Given that gender was associated with levels of burnout and that gender-specific factors associated with burnout were of interest to the current investigation, we performed a similar analysis in male and female psychiatric nurses separately. Table 2 shows the detailed findings. We found several factors associated with burnout in both male and female psychiatric nurses, including longer working hours per day; endorsing perceived negative impact and not endorsing positive impact (relative to neutral impact); and higher levels of depression, anxiety, and stress. In addition to these common factors, burnout was significantly associated with working more monthly night shifts for male (but not female) psychiatric nurses. We found three additional factors associated with burnout for female

TABLE 2 *Binary logistic regression analysis for associations with burnout in the whole sample and separately by gender*

| | Total sample (N = 8971) | | | | Males (n = 1852) | | | | Females (n = 7119) | | | |
| | | | 95% CI | | | | 95% CI | | | | 95% CI | |
Variables	P	OR	Lower	Upper	P	OR	Lower	Upper	P	OR	Lower	Upper
Age	0.070	0.991	0.981	1.001	0.409	0.992	0.972	1.012	0.148	0.992	0.980	1.003
Male	**0.016**	**1.177**	**1.031**	**1.343**	/	/	/	/	/	/	/	/
Marital status												
Single (ref. Divorced/widowed)	**0.033**	**1.405**	**1.028**	**1.920**	0.992	1.004	0.492	2.047	**0.016**	**1.541**	**1.086**	**2.187**
Married (ref. Divorced/widowed)	**0.036**	**1.355**	**1.020**	**1.799**	0.777	1.102	0.563	2.158	**0.030**	**1.417**	**1.035**	**1.940**
Education												
Bachelor degree or higher (ref. Associate degree or below)	0.091	1.116	0.983	1.268	0.053	1.286	0.996	1.660	0.387	1.067	0.921	1.237
Professional title												
Middle (ref. Junior)	**0.009**	**1.209**	**1.049**	**1.395**	0.132	1.274	0.930	1.747	**0.033**	**1.192**	**1.014**	**1.402**
Senior (ref. Junior)	0.597	0.924	0.689	1.239	0.099	2.355	0.850	6.523	0.360	0.862	0.627	1.185
Administrative position (ref. Yes)	**0.039**	**1.278**	**1.013**	**1.613**	0.666	0.898	0.550	1.465	**0.017**	**1.386**	**1.061**	**1.809**
Working days per week	0.265	0.955	0.880	1.036	0.823	0.981	0.832	1.158	0.253	0.947	0.862	1.040
Working hours per day	**<0.001**	**1.094**	**1.051**	**1.138**	**0.004**	**1.121**	**1.037**	**1.213**	**0.017**	**1.386**	**1.061**	**1.809**
Monthly night shift	**0.001**	**1.026**	**1.010**	**1.042**	**<0.001**	**1.071**	**1.034**	**1.110**	0.074	1.016	0.999	1.043
Annual income	0.221	1.006	0.997	1.015	0.907	0.999	0.978	1.020	0.156	1.007	0.997	1.018
Frontline experience with COVID-19 patients (ref. Yes)	0.330	1.069	0.935	1.221	0.099	1.246	0.960	1.619	0.908	1.009	0.863	1.180
Perceived impact of COVID-19 on medical work												
Positive (ref. Neutral)	**<0.001**	**0.588**	**0.524**	**0.661**	**0.001**	**0.649**	**0.507**	**0.830**	**<0.001**	**0.574**	**0.503**	**0.655**
Negative (ref. Neutral)	**<0.001**	**1.755**	**1.493**	**2.062**	**0.019**	**1.535**	**1.073**	**2.195**	**<0.001**	**1.386**	**1.061**	**1.809**
Depression	**<0.001**	**2.960**	**2.527**	**3.467**	**<0.001**	**3.545**	**2.555**	**4.919**	**<0.001**	**2.775**	**2.314**	**3.327**
Anxiety	**<0.001**	**2.631**	**2.289**	**3.023**	**<0.001**	**2.478**	**1.851**	**3.319**	**<0.001**	**2.693**	**2.298**	**3.156**
Stress	**<0.001**	**3.264**	**2.612**	**4.079**	**<0.001**	**3.508**	**2.105**	**5.845**	**<0.001**	**3.270**	**2.548**	**4.196**

Significant ($P < 0.05$) findings are bolded.

(but not male) psychiatric nurses, including being single or married as opposed to being divorced or widowed, having a middle professional title as opposed to a junior title, and holding an administrative position as opposed to not holding such position.

DISCUSSION

To our knowledge, the current investigation was the first nationwide large-sample study in China to examine gender differences in factors associated with burnout among psychiatric nurses during the COVID-19 pandemic. This focus is critical and timely because the COVID-19 pandemic has placed tremendous work demands on healthcare workers, particularly on psychiatric nurses who face unique challenges due to the patients they care for and the requirements of their jobs. As burnout among psychiatric nurses may lead to low levels of psychological well-being, high levels of attrition, and poor patient care (Ghavidel *et al.* 2019), our findings offer insight into potential burnout prevention strategies that may benefit all psychiatric nurses in China and those that may be optimal for a specific gender group. In addition, the high rates of depression, anxiety, and stress levels that were evident in this sample underscore the importance of providing support to psychiatric nurses both during and after the pandemic to ameliorate their psychological distress, which hopefully leads to reducing their levels of burnout (Fernandez *et al.* 2020).

High rates of mental health symptoms and burnout during the COVID-19 pandemic

Findings from this large-scale study indicate significant levels of depression and anxiety in this sample (17.24% and 24.36%, respectively). The prevalence of depression and anxiety appeared to be higher than that in a pre-pandemic study of psychiatric nurses (Wang *et al.* 2015), but lower than that in nurses who are on the front lines caring for COVID positive patients during the COVID-19 pandemic in China. The latter may be attributed to the fact that our investigation was conducted during a relatively stable stage of the COVID-

19 pandemic in China. The differences in the prevalence rates across studies may also be due to differences in the measures used to assess depression and anxiety and their cut-off values. In addition, over one-quarter (27.27%) of the sample endorsed symptoms consistent with burnout, highlighting alarmingly high rates of burnout among psychiatric nurses in China. These findings underline the importance of attending to the high rates of mental health symptoms and burnout and the urgent need for implementation of corresponding interventions.

Comparison of burnout and associated factors in male versus female psychiatric nurses

Male psychiatric nurses reported a higher prevalence of burnout than did female psychiatric nurses. Two dimensions of burnout, depersonalization and personal achievement, also differed between the genders, with male psychiatric nurses endorsing higher levels of burnout on these two dimensions than their female counterparts. The binary logistic regression results involving the full sample also confirmed that being male was a risk factor for burnout. These findings are consistent with a previous systematic review of 11 studies suggesting that being male is a predictor of burnout among mental health nurses (López-López et al. 2019). Additionally, in line with prior findings (Xian et al. 2020), male nurses reported higher depersonalization and lower personal achievement than their female counterparts.

Several possible factors may have contributed to the higher prevalence of burnout among male psychiatric nurses as compared to female psychiatric nurses. First, male psychiatric nurses may be less prepared to cope with work pressure than their female colleagues. Some occupations, such as the nursing profession, are prominently defined by specific genders, and nursing may be considered an occupation that is typically dominated by and suitable for female professionals (Hu et al. 2017). As such, female psychiatric nurses may receive more peer support and experience a greater sense of belongingness at their workplace compared to their male counterparts. Furthermore, the negative societal perceptions and stereotypes about male nurses may contribute to their higher rates of burnout. For example, previous research has shown that males who choose nursing careers experience considerable social and psychological pressure (Ashkenazi et al. 2017). Additionally, male psychiatric nurses are generally younger, and they undertake repetitive workload and leadership

expectations. These factors may render male psychiatric nurses vulnerable to a low sense of personal accomplishment.

Moreover, due to gender stereotypes associating being male with power and dominance, male psychiatric nurses often find themselves being expected to protect female psychiatric nurses and being in a state of high tension when facing violent behaviours of psychiatric patients. Consistent with this, an earlier investigation demonstrated that violence against psychiatric nurses is widespread in the workplace, and an important predictor of violence against nurses is being male (Zeng et al. 2013). In addition, nursing is a highly emotionally demanding job, and males were reported to experience more challenging and obstructive stressors, leading to higher levels of emotional exhaustion and depersonalization (Wang et al. 2017). Moving forward, incorporating gender-based strategies in nurse training and practice is critical. For example, it is important to normalize nursing as a male occupation, recognize the unique challenges faced by male nurses, and break down the prejudice against men entering the nursing profession (Blackley et al. 2019).

Several work-related factors also differed between male and female psychiatric nurses in the current sample. First, the prevalence of frontline experience with COVID-19 patients was higher among male as compared to female psychiatric nurses. Nurses with frontline experience with COVID-19 patients were more vulnerable to experiencing mental distress (Azoulay et al. 2020). Second, in terms of workload, male psychiatric nurses worked more night shifts per month than female nurses. Our results also revealed that a higher number of night shifts per month were associated with burnout in male (but not female) nurses. Interestingly, however, male psychiatric nurses reported fewer daily working hours. It may be that some female psychiatric nurses were not assigned to night shift due to breastfeeding or pregnancy.

Moreover, gender differences emerged regarding mental health symptoms. Specifically, male psychiatric nurses reported a higher prevalence of depression and anxiety than did female psychiatric nurses. This finding was notable as rates of depression and anxiety may be recognized as higher in females than males (Santabárbara et al. 2021; Zhang et al. 2019), further highlighting the unique psychological challenges experienced by male psychiatric nurses. Future researchers should examine whether this gender difference finding is unique among psychiatric nurses or generalizable to other areas of nursing, as well as examine what factors

contribute to more prevalent depression and anxiety among male (vs. female) psychiatric nurses, especially during a crisis such as the COVID-19 pandemic. Of note, male and female psychiatric nurses also differed in several demographic characteristics such as age, marital status, education, and professional title, which may partially explain gender differences in levels of depression and anxiety.

Taken together, these findings on gender differences in burnout and associated factors suggest several promising avenues for future research. For example, further research is needed to establish a causal link between working night shifts and burnout for male psychiatric nurses. In addition, longitudinal research is needed to elucidate the temporal associations among demographic, work-related, and mental health factors. The findings suggest that more thoughtful attention to scheduling and reducing mental health symptoms may be critical components of burnout interventions, especially for male psychiatric nurses. The results also highlight the importance of promoting an atmosphere in which male psychiatric nursing is accepted and positively regarded in schools and work settings to enhance the professional development and psychological well-being of male psychiatric nurses as well as gender equality in the nursing profession.

Contributors to burnout among both male and female psychiatric nurses in China

Our findings reveal many variables associated with burnout among both male and female psychiatric nurses. Concerning work-related factors, working hours per day was a common factor associated with burnout among all psychiatric nurses. This finding is consistent with previous research showing a positive association between burnout and daily working hours (Wang *et al*. 2020).

In addition, relative to perceiving a neutral impact, perceiving a negative impact of the COVID-19 pandemic was associated with higher rates of burnout for both male and female psychiatric nurses, whereas perceiving a positive impact was associated with lower rates of burnout for both genders. Although traumatic events can have a negative impact on people's psychological well-being, they can sometimes lead to positive outcomes. A systematic review showed that more than 50% of individuals experience positive growth following trauma (Wu *et al*. 2019). For psychiatric nurses, helping people in psychological distress with their expertise during the pandemic may lead to an increased sense of

achievement and pride in their job responsibilities as well as enhance their professional identity. Consistent with this speculation, research has demonstrated that during the COVID-19 pandemic, compared to the general population, nurses exhibited a greater sense of access to new possibilities, more personal strength, and more significant spiritual change (Li *et al*. 2022). Therefore, perceived positive impacts of COVID-19 may allow psychiatric nurses to appreciate the value of their work, thereby reducing the possibility of burnout, whereas perceiving negative impacts may have the opposite effect. Future longitudinal research is needed to directly examine the role of the perceived impact of the COVID-19 pandemic in predicting risks for burnout among psychiatric nurses.

In addition to perceived impact of COVID-19, mental health symptoms (depression, anxiety, and stress) were also associated with burnout for both genders. These results are consistent with findings from previous studies involving diverse samples such as medical health practitioners and midwives in different countries (Ashraf *et al*. 2019; Vaičienė *et al*. 2022). Despite the robust evidence suggesting a link between mental health symptoms and burnout, few studies have shed light on helpful resources for healthcare workers, especially psychiatric nurses, to cope with occupational stress and high work demands. One potential intervention relates to ensuring positive work engagement, that is, an independent structure and a positive, fulfilling, work-related mental state. Because previous research has shown that job engagement is inversely related to burnout (Castro *et al*. 2020). Given the cross-sectional nature of our data, we could not discern the causal relations between burnout and mental health symptoms. However, we suspect that they likely influence each other over time, such that psychiatric nurses who experience greater levels of depression, anxiety, and stress are at a higher risk for burnout, which further exacerbates their mental health symptoms. Therefore, regularly assessing mental health symptoms and providing psychological interventions may prove to be effective burnout prevention and early intervention strategies. Future research is needed to test these hypotheses.

Gender-specific factors associated with burnout

Several demographic and work-related factors were found to be differentially associated with burnout among male as compared to female psychiatric nurses in this sample.

Among male psychiatric nurses, more monthly night shifts were associated with burnout. This is unsurprising as night shifts disrupt one's biological rhythms and subject nurses to long-term fatigue. One study involving Chinese psychiatric nurses showed that night shift nurses have worse sleep, which leads to higher levels of burnout (Lyu et al. 2021). Another study of nurses in Spain revealed that night shift nurses lack confidence in their nursing ability (Gómez-García et al. 2016), likely resulting from their missed care plans and deprived sleep. However, the monthly night shift was not associated with burnout among female psychiatric nurses. The discrepant findings between genders may be explained by changes in heart rate variability (HRV) associated with night shifts. Specifically, a reduction in HRV is found to be associated with night shifts and can lead to a reduced ability of the autonomic nervous system to adapt to difficult internal and external environments and to cope with stress (Amirian et al. 2014). A previous study examining HRV of nurses demonstrated that reduction in HRV is more severe in males than females, which suggests that males are at a higher risk for physical dysfunctions than females (Bonnemeier et al. 2003).

For female psychiatric nurses, in addition to the common factors associated with burnout for both genders, marital status, professional title, and administrative position were also associated with burnout. One interesting finding was that compared with divorced/widowed marital status, being single or married was associated with a higher burnout rate in female psychiatric nurses. For female psychiatric nurses who are divorced or widowed, work may be a source of stable income and a way to divert their attention away from not having a committed partnership. This may be of greater importance during the pandemic, as unemployment has affected many people, and a stable income can bring more security. On the other hand, single nurses are generally younger and face greater difficulties and pressure when they first enter the profession, and many likely have not established a network of relationships within their workplace from whom they can seek support and guidance. In a related vein, a previous study showed that single nurses are more emotionally exhausted and have low personal accomplishment (Hunter et al. 2019; López-López et al. 2019). In contrast, among male psychiatric nurses, being married was not a risk factor for burnout. Given that women often have more household and child-rearing responsibilities outside of work than their male counterparts (Gjerdingen et al. 2000), juggling both home and work

tasks may increase female psychiatric nurses' risk for burnout. Having a mid-level professional title relative to a junior professional title is also a risk factor for burnout among female psychiatric nurses. In the hospital setting, one's professional title or position is typically related to their years of service. Nurses with mid-level titles have longer working years than junior nurses, which may lead to burnout due to long-term repetitive work (Yang et al. 2018). In addition, female psychiatric nurses without administrative positions were more likely to suffer from burnout. This may be because psychiatric nurses with administrative positions have less workload on trivial matters in the psychiatric ward and are not responsible for bed management, and therefore they have fewer prolonged and intense interactions with psychiatric patients during the pandemic. But for psychiatric nurses without administration, they are more likely to engage in trivial tasks such as supporting nucleic acids and testing itinerary codes during the epidemic. In addition, a study found that having administrative support increases employee satisfaction and positively affects the organization (El Haddad et al. 2019). Existing research has revealed that some organizations put up barriers to limit women's career advancement to senior management positions (i.e., the 'glass ceiling' effect; Vanderbroeck & Wasserfallen 2017). We speculate that one potential way that female psychiatric nurses can break this glass ceiling effect is to hold administrative positions.

Limitations

Several limitations should be considered when interpreting the current findings. First, our survey utilized a cross-sectional design, and thus we could not draw causal conclusions. Second, all measures were self-report questionnaires, and recall bias cannot be ruled out. Future studies may consider using objective measures of burnout (such as absenteeism, and work efficiency) and semi-structured clinical interviews to assess mental health symptoms. Third, despite the high response rate in this study, some psychiatric nurses did not respond to this questionnaire, possibly due in part to high levels of mental health symptoms or burnout; thus, the actual prevalence of mental health symptoms and burnout among psychiatric nurses may be higher than estimated by the current study. The demographic data of those who did not participate in the study were not collected, and thus we could not determine what may have contributed to the lack of participation among the small subset of psychiatric nurses. Finally, the nurses in our

sample were from the top-tier psychiatric hospitals and our findings may not be generalizable to psychiatric nurses working in other settings, such as those in rural areas.

CONCLUSIONS

Based on a large, nationally representative sample of psychiatric nurses in China, we found that more than a quarter of all samples (27.7%) reported experiencing burnout during the COVID-19 pandemic, with a higher rate in male than in female psychiatric nurses. Mental health symptoms (depression, anxiety, and stress), longer working hours, and the perceived negative impact of COVID-19 on medical work were associated with burnout in both male and female psychiatric nurses. Additionally, some gender-specific factors warrant special attention when developing effective interventions tailored for male and female psychiatric nurses.

Considering the adverse consequences of burnout, it is important to regularly screen for burnout and to ensure that such screening attends to relevant work-related and mental health symptoms, in addition to burnout. It will also benefit the workforce of psychiatric nurses in China if targeted burnout-related prevention and intervention based on gender are designed and routinely implemented in health systems. Doing so can improve the quality of nursing care and patient–staff relationships (Shmilovitz *et al.* 2021). It is also important to prioritize a supportive and harmonious department culture and organizational atmosphere, as the culture in which psychiatric nurses are embedded is likely to markedly impact their well-being and reduce their risk for burnout. Hospital managers and policymakers should be aware of the high rates of burnout and negative effects on both healthcare providers, such as psychiatric nurses, as well as patients, and develop policies and procedures accordingly.

RELEVANCE FOR CLINICAL PRACTICE

This study contributes to a better understanding of the current status of job burnout among psychiatric nurses during COVID-19 and provides new insights into the prevention of burnout in psychiatric nurses. The findings point to the high burnout rate experienced by psychiatric nurses during the COVID-19 pandemic, especially among male psychiatric nurses. In addition to the factors linked to burnout for both genders, gender-specific factors also deserve consideration from policymakers when developing effective interventions tailored to each gender.

ETHICAL APPROVAL

The research protocol was approved by the ethics committee of Chaohu Hospital of Anhui Medical University, the approval number was 202002-kyxm-02.

DATA AVAILABILITY STATEMENT

Data sharing not applicable to this article as no datasets were generated or analysed during the current study.

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