AMERICAN PSYCHOLOGICAL ASSOCIATION
GREEN CROSS Academy of Traumatology
Traumatology

ISSN: 1085-9373
2021, Vol. 27, No. 4, 432–443
https://doi.org/10.1037/trm0000343

Lessons for Mental Health Systems From the COVID-19 Front Line: Chinese Healthcare Workers' Challenges, Resources, Resilience, and Cultural Considerations

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Frontline health providers who worked in Hubei, China, during the initial outbreak of the novel coronavirus (COVID-19) experienced poorer mental health outcomes than those who worked elsewhere in China, but many of these workers denied psychological challenges and did not use resources when offered. This study investigated challenges, mental health, sources of strength, and coping strategies among frontline healthcare professionals working in the initial Hubei COVID-19 outbreak. Healthcare workers (N = 23) who went to Hubei during the COVID-19 outbreak completed a semistructured interview about their experiences at the front line and use of mental health resources. Thematic analysis revealed several challenges participants faced as a result of their work conditions. The vast majority of participants reported physical and psychological symptoms. Nevertheless, some denied experiencing any distress, and none accessed psychological assistance as a way of self-care. Participants described their social network as particularly helpful as they were coping with the intensive work demands and that their strong sense of responsibility for patients and trust in the medical system were sources of strength. Our findings highlight that even in the face of stress-related challenges, healthcare workers may not seek care for their physical and psychological symptoms, which may lead to persistent mental health consequences. Implications for providing mental health services to healthcare providers and first responders are discussed in the Chinese cultural and societal context; we offer considerations for bridging health resources in China with the potential for establishing a more responsive and equitable mental health infrastructure.

Keywords: first responders, mental health, COVID-19, healthcare workers, resilience

In December 2019, Wuhan (Hubei, China) had the first outbreak of the novel coronavirus (COVID-19). Thousands of healthcare workers (HCW) across China went to Hubei in response to this public health crisis. These HCW faced significant challenges such as heavy workloads, long work hours, and shortages of hospital resources and essential personal protection equipment (PPE). As the COVID-19 outbreak spread and became a worldwide pandemic, HCW around the globe reported similar challenges (Adams & Walls, 2020; McMahon et al., 2020). Grappling with many unprecedented clinical and nonclinical demands, HCW in China and around the world reported increased mental health symptoms such as anxiety, posttraumatic stress, and depression (Chew et al., 2020; De los Santos & Labrague, 2021; Du et al., 2020; Kang et al., 2020; Krishnamoorthy et al., 2020; Lai et al., 2020; Qi et al., 2020; Shaukat et al., 2020; Shechter et al., 2020; Si et al., 2020; Spoorthy et al., 2020). Past studies have shown that these mental health consequences may have a long-term impact on HCW's well-being, even years after the initial crisis has subsided (H. Hall, 2020).

As the first of the first responders, HCW who worked in Wuhan, the COVID-19 epicenter in China, experienced worse mental health outcomes compared to those who worked outside the province (Lai et al., 2020). Of concern are observations that HCW in Wuhan rarely utilized mental health services, despite services being established to specifically meet the needs of these HCW during the COVID-19 outbreak. By February 2020, many HCW in China were already experiencing distress symptoms but denied having problems and refused psychological assistance (Q. Chen et

This article was published Online First August 26, 2021.
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This project was supported by an Early Start research fellowship awarded to Ruofan Ma from Michigan State University.
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al., 2020). These observations raised concerns that Wuhan's frontline HCW's mental health needs were not adequately addressed (Xiang et al., 2020).

HCW's Use of Mental Health Resources and Development of Mental Health Services in China

Past studies have found that despite being at high risk, healthcare providers (Chew-Graham et al., 2003; Clement et al., 2015; Dyrbye et al., 2015; Epstein & Privitera, 2019; Firth-Cozens, 2001; Givens & Tjia, 2002; Gulliver et al., 2010; Kirch, 2021; Moutier, 2018; Schwenk et al., 2010) and first responders (Castellano & Plionis, 2006; Jones, 2017; Kleim & Westphal, 2011; Lanza et al., 2018; Velazquez & Hernandez, 2019; Zolnikov & Furio, 2020) underutilize mental healthcare due to workplace stigma. Moreover, Chinese frontline HCW's reluctance to access psychological assistance might be further exacerbated by China's historical and contemporary societal context. For example, psychotherapy was introduced to China by Western therapists in the late 1980s (Zhang, 2020, p. 10) and continues to be largely inaccessible for the general public. The unavailability of psychotherapy, coupled with heavy stigma surrounding mental health challenges, contributes to less comfort and familiarity with language used to describe psychological conditions (Kleinman & Good, 1985; Tsai et al., 2004; Zhou et al., 2021) and the tendency seen in many Asian cultures to express mental health conditions in somaticized versus psychological terms, such as discussing gastrointestinal distress and headaches rather than subjective feelings of sadness (American Psychiatric Association, 2013).

Relatively recent national tragedies galvanized the Chinese government to recognize the societal burden of mental health concerns and to sponsor mental health infrastructure in various settings, such as hospitals and education systems. For example, in 2003, China faced the severe acute respiratory syndrome (SARS) epidemic, which 93.5% of HCW at SARS-affected hospitals in China considered a traumatic event and resulted in 22% of HCW in emergency units meeting criteria for posttraumatic stress disorder (PTSD; Lin et al., 2007). Although some mental health services were available during the SARS epidemic (Gao & Chen, 2003; Ma, Nguyen, et al., 2020), it was not until the 2008 Wenchuan earthquake (measured at 8.0 magnitude in Sichuan province) that, for the first time in recent Chinese history, teams of mental health professionals were organized to address the resulting psychological needs (Zhang, 2020, p. 150). China's emphasis on and speed of response to the associated mental health crisis during the COVID-19 outbreak was unprecedented, but challenges organizing and managing mental health service provision remained (Duan & Zhu, 2020; Ma, Nguyen et al., 2020).

Cultural Considerations of the Stress and Coping Framework

Our examination of the Chinese HCW's experience during the COVID-19 outbreak is informed by stress and coping frameworks positing that when individuals face stressful situations, they use behavioral and cognitive strategies to either change the situation or modify their reaction to it (Lazarus & Folkman, 1984). If the stressor exceeds their coping resources, they may experience additional stress and potential long-term health consequences (Weber, 2001). During the COVID-19 outbreak, China quickly established mental health services for frontline HCW to provide them with additional coping resources. However, it has been observed that HCW in China did not seek professional mental health support (Q. Chen et al., 2020; Xiang et al., 2020), raising questions about what coping strategies HCW found helpful and whether or not the available services addressed the needs HCW during this stressful period.

Psychotherapy and theories of stress and coping are deeply cultured, built on distinct Euro American values regarding personhood, selfhood, and social interactions (Caplan, 1998; Zhang, 2014). For example, Lazarus and Folkman's (1984) definition of coping focused on an individual's thoughts and behaviors used to manage internal and external stressors (Folkman & Moskowitz, 2004; Lazarus & Folkman, 1984). Their individual focus led to research on individual-level coping responses to the exclusion of the cultural context in which the coping strategies and resources are examined (Wong & Wong, 2006). Despite stress being culturally and situationally contextualized and research demonstrating that mental health services are maximally effective when they are culturally sensitive and reflect the cultural norms and values in which they are offered (G. C. N. Hall et al., 2016), there are few well-developed theories and methodologies that incorporate cultural contexts in stress and coping research. Of the few that address culture, most focus only on testing the generalizability of theories that are centered on Euro-American origins (Wong & Wong, 2006). Focusing on psychotherapy, stress, and coping paradigms that originated in Western cultural contexts perpetuates challenges of their adaptation to the Chinese culture and efforts to increase access for the Chinese population (Yin et al., 2019; Yu et al., 2015).

Research on Chinese HCW During the COVID-19 Outbreak and the Current Study

Given that Chinese first responders needed to manage distress but may have faced considerable structural barriers to accessing mental health services, it is important to understand resilience factors that may help foster a protective environment for Chinese HCW and other first responders in the future. Some quantitative studies conducted during the COVID-19 outbreak found that Chinese HCW benefited from a variety of strengths and coping strategies as alternatives to seeking professional mental health support. For example, based on data collection between January and March 2020 (Cai et al., 2020) and between February and April 2020 (H. Chen et al., 2020), social support from family and colleagues, availability of strict infection control guidelines, and recognition from hospital management and the government all provided HCW with psychological protections. A recent meta-analysis reviewed 31 studies on coping among COVID-19 HCW's and found that coping strategies, psychological resilience, and social support positively influenced HCW's mental health during the COVID-19 pandemic (Labrague, 2020). It is important to gain more in-depth understanding about Chinese frontline HCW's sources of strength, given their importance in establishing future support systems and reducing mental health disparities among HCW in China.

Most research about COVID-19 frontline HCW's experiences in Wuhan has been quantitative, and more qualitative studies are needed to provide nuanced insights into their lived experiences. To our knowledge, there has been only one qualitative study centered on the experiences of COVID-19 frontline HCW in Wuhan

(Liu et al., 2020). Interviews of 13 HCW between February 10 and February 15, 2020, described the HCW's sense of responsibility, work challenges, and resilience at the early stages of the COVID-19 outbreak. More research is needed to supplement this work, given this previous study was conducted at the early stages of the outbreak, near the beginning of Wuhan's lockdown (on January 23) when most Chinese HCW from outside of Hubei began arriving. As such, the experiences of HCW from outside of Hubei and during later stages of the outbreak may differ from local HCW's reports during the earlier stages.

The current study provides additional insights into frontline HCW's experiences in Wuhan by analyzing interview data obtained from 23 HCW who went to Wuhan from outside the Hubei province during the peak of COVID-19 outbreak. Interviews were conducted immediately after the HCW returned to their home province, during their 14-day mandatory quarantine at a centralized location by an organization that trains psychologists. The data were originally collected to identify the mental health needs of frontline HCW and to explore potential services that could be developed to meet those needs. Deidentified interview data were then made available for secondary data analysis for the current study. In addition to examining challenges at work and resilience, the current study focused on investigating HCW's reasons for not seeking mental health services. Results of this study provide insight into ways to establish an effective mental health infrastructure for current and future first responders that is mindful of the Chinese cultural context. Such a culturally grounded and sensitive mental health infrastructure that is responsive to frontline HCW may go beyond simply reducing mental health disparities and instead promote well-being in the face of future health crises.

Method

Participants and Procedures

HCW ($N = 23$) who went to Hubei during the COVID-19 outbreak completed a semistructured interview about their experiences in Hubei, use of mental health resources, and factors that supported them through work challenges. Participants hailed from eight hospitals or centers for disease control and prevention, were primarily female (82.6%), and averaged 34.6 years of age ($SD = 4.76$). They arrived in Hubei between February 9 and February 15, 2020, and returned to their home province between March 17 and March 24. A certified psychotherapist conducted the interviews in Mandarin Chinese while the participants were in a 14-day quarantine immediately following their return from Hubei to their home city in Northern China.

Questions of the semistructured interview included the following: (1) How are the jobs at the front line different from what you worked on before? Did you expect these differences? Did these differences create any difficulty for you? (2) How is your physical health now? (3) How are your emotions? Have you felt the work at the front line affected your emotional well-being? (4) Do you have a social network around you that you can trust? (5) How do you manage your stress? (6) When your emotions and stress cannot be relieved on your own, how do you feel about seeking professional mental health support? (7) When facing high work demands, what are some factors that supported you through the difficult times? The researchers only obtained the deidentified data for a secondary analysis. The Institutional Human Research Ethics Board at Michigan State University approved the use of the deidentified interview data as nonhuman research which was exempt from further institutional review.

Data Coding

Data were initially coded and analyzed using NVivo 11 and Microsoft Excel by four members of the research team (Ruofan Ma, Xianni Zhang, Manning Zhang, and Wei Chen). Thematic analysis was used to find meaningful patterns within the data that were identified as themes (Braun & Clarke, 2006). Open coding, in which each sentence was coded for meaning, was followed by organizing codes into related categories. Categories were documented in a coding manual. Two researchers (Xianni Zhang, Manning Zhang) fluent in Mandarin independently coded transcript themes, with substantial initial agreement ($\kappa = .72$), and met with the first author (Ruofan Ma) to clarify codes and categories until consensus was reached by the team.

Results

Thematic analysis resulted in themes organized into four categories (listed in Table 1), including (a) work challenges at the front line, (b) physical or emotional symptoms experienced, (c) use of mental health services, and (d) specific coping strategies and other sources of resilience. Overall, most participants reported experiencing some distress symptoms; however, none of the HCW sought professional mental health support. Participants mainly relied on social support and self-help strategies to cope, and many reported cultural and societal factors that provided them with sources of strength and resilience. Specific themes within these categories are presented below.

Category 1: Work Challenges at the Front Line

Long and/or Intensive Work Hours: "You Are Responsible for at Least 130 Patients."

The most prominent theme reported by participants regarding challenging work conditions was long and/or intensive work hours. As one participant described, "Our work shifts were set to be 6 hr, but it's impossible to just work for the 6 hr. You work after hours, and you are responsible for at least 130 patients."

Difficulties Related to PPE: "I Felt Suffocated to Death."

Participants reported inadequate supplies of PPE (e.g., "On the first day, I had a coverall outside, but did not have an isolation gown... There were no more isolation gowns.") and physical discomfort when using the PPE available to them. For example, the following HCW discussed challenges breathing while wearing two layers of protective gowns and feeling they had to endure to avoid burdening coworkers:

> I quickly felt difficulty breathing. It was very uncomfortable and I had to walk slowly. Talking and moving felt suffocating... It was pretty bad. I didn't expect that. The shift was 6 hr. It was suffocating from the beginning. I endured it because I had heard that a colleague [almost passed out] but still worked. When this colleague couldn't endure it anymore, they told others and their colleagues asked them to go out [of the ward]. Something like this happened, so I felt more psychological pressure; when it was around 2 hr [in the ward], I felt

Table 1
Summary of Themes Emerged From the Interview Transcripts

Category 1: Work Challenges at the Front Line
Long and/or intensive work hours
Difficulties related to personal protective equipment (PPE)
Complicated procedures
Rapid changes
Category 2: Physical or Emotional Symptoms
Sleep disturbance
Reduced appetite
Physical symptoms
Fear and worry
Category 3: Reasons for Not Using Mental Health Services
Self-help is sufficient
Professional support is for more severe distress
Concerned about burdening mental health service providers
Category 4: Specific Coping Strategies and Other Sources of Resilience
Specific coping strategies:
Support from social network
Exercise
Using entertainment media.
Passive strategies (e.g., staying busy or waiting it out)
Environmental and psychological sources of strength:
Sense of mission and responsibility
Trust for the system
Camaraderie with colleagues
Feeling cared for by leadership, institutions and/or the country
Gratitude from the local residents
Environment provided by family and friends

> suffocated to death, but I told myself I couldn't go out. Hang in there. Don't leave. If I go out, I would be burdening my colleagues.

Complicated Procedures and Rapid Changes: "Every Shift, There Was Some Unexpected Situation."

Participants also reported that the procedures and rules were detailed, complicated to follow, and changed frequently without warning. For example, the following participant described struggling to relocate patients when the roof began leaking at a Fangcang hospital (mobile cabin hospitals built in Hubei to accommodate the large number of COVID-19 patients that regular hospitals could not accommodate):

> The second time I entered the ward... It was raining, and the Fangcang hospital was leaking very badly... I didn't even know how many rooms there were. Ward 1, Ward 2, Ward 3. I didn't know where they were. But I was told that Ward 3 was leaking too much, so I was responsible for [managing] the transfer of all the Ward 3 patients to Ward 1. Oh, that was so much work and so much stress... I was unfamiliar about the environment at all. Then I was told to direct certain patients to do something. Do what? Where? I had no idea... This was the second shift. Every shift there was some unexpected situation.

Category 2: Physical or Emotional Symptoms

Sleep Disturbance and Reduced Appetite: "I Frequently Experience 'Going Blank'."

Participants commonly experienced sleep disturbances and some reported reduced appetite. Some participants reported difficulty falling asleep (e.g., "It was busy all the time. I couldn't fall asleep. Then it became habitual and is still a challenge. My brain has become slow, and I frequently experience 'going blank.'"). Some attributed sleep difficulties to changing work schedules:

> We had four shift schedules. Only one was a day shift... The other three were night shifts... Once the circadian rhythm was set [for the night shifts], it's hard to adjust back. I would be tired during the day but feel awake at night.

Physical Symptoms: "I Felt I Was Almost Dying."

When asked about discomfort in addition to those related to sleep and eating, participants described physical symptoms they never experienced before that surfaced outside of the ward. Some symptoms were particularly anxiety-provoking as they resembled symptoms of COVID-19. For example, one person described experiencing low blood sugar:

> I experienced low blood sugar that evening. I never had that experience before, and I felt I was almost dying... My roommate [said] my face was so pale. The next day I had a fever, 37.3 °C... Think about it. How scary!

Fear and Worry: "Everything Was Unknown."

Anxiety, fear and worry emerged as a prominent theme from the interviews, with many participants describing a general feeling of anxiety without specific content. For example, a participant described their reaction upon seeing Wuhan in lockdown:

> My original impression about Wuhan was it's a busy city. But when we got there, for the first 2 days, not a single person was on the street. There were also few cars. It made me feel that the situation was worse than I expected... I felt nervous, a bit anxious. Everything was unknown.

Some descriptions of worry involved worried or ruminative thoughts, including being unable to stop thinking about work between work shifts. Commonly reported ruminative thoughts involved contracting COVID-19, passing out in the ward, colleagues' well-being, and inconveniencing or creating work for others. The earlier quote included under the section Difficulties Related to PPE in Category 1 also illustrate these worries. Participants reported persistent anxious thoughts related to seeing others' anxiety, witnessing others' poor health conditions, and ability to handle the inevitable set of rapidly changing conditions they faced working as frontline HCW at the epicenter of a pandemic. In addition, some participants reported being worried about family members in their home city and/or feeling home sick.

Category 3: Reasons for Not Using Mental Health Services

When asked about their use of professional mental health services, three types of services were explicitly mentioned by the participants, including those provided by psychological assistance hotlines, local counselors or psychotherapists, and online mental health consultation groups. Notably, because the interview did not

explicitly ask the participants what services they were aware of, these services mentioned may not be an exhaustive list, and those who did not mention particular services were not necessarily unaware of them. Participants reflected that information about mental health resources was distributed to every frontline healthcare provider (e.g., "We had a group. We got QR codes or something from the group and was told we could scan it if we needed psychological counseling."). Nevertheless, none of the participants reported using any professional mental health service, and only a few said they would have used mental health services if they had felt a need to do so. Four themes emerged regarding reasons for not using professional mental health services.

Self-Help Is Sufficient: "I Haven't Had Issues That I Couldn't Resolve Myself."

Participants often reported that their self-care was sufficient to address their distress. Moreover, some mentioned that they would seek services if self-help could not alleviate their distress (e.g., "If I actually have the need, I would definitely seek help. . . I didn't seek help because I haven't had issues that I couldn't resolve myself.") Specific coping strategies reported and illustrative quotations are included in the following under Category 4.

Professional Support Is for More Severe Distress: "I Didn't Collapse."

In addition to stating that self-help was sufficient to address their psychological distress, participants often explicitly commented that mental health services were for those experiencing more severe distress than themselves. Although some participants expressed they would seek support if needed, the level of distress described as warranting mental health support tended to be high. For example, some participants suggested that they would have to "collapse" to warrant seeking mental health services (e.g., "I didn't collapse. I'm quite happy just alleviating the distress by myself or through reaching out to my colleagues and friends." "If I cannot help myself, if I collapse—maybe couldn't work at all—then I would seek help. But I think I'm quite strong psychologically.")

Concerned About Burdening Mental Health Service Providers: "This Service May Be for All the Healthcare Workers Who Went to Hubei, and There Were 40,000 of Us."

Participants also expressed concerns about burdening the mental health system or creating more work for mental health providers if they sought such services. For example, one participant described,

> We get a QR code [to reach psychological services], but I never used it. . . Maybe behind the QR code is also a doctor. . . If I can help myself, I'd do it myself and not create additional work for the psychological counseling services. After all, this service may be for all the HCW who went to Hubei, and there were over 40,000 of us.

Mental Health Services Are Intrusive: "Would I Tell More to a Counselor or Therapist than to My Family?"

Another theme emerged from the reasons for not seeking mental health support is related to the participants' general impression about mental health services. Specifically, some felt that mental health services would be intrusive to their privacy (e.g., "I thought, would I tell more to a counselor or therapist than to my family? . . . I think psychology is just digging into others' privacy.")

Category 4: Specific Coping Strategies and Other Sources of Resilience

Although none of participants used mental health services, many engaged in activities that helped them cope with emotional challenges during their time on the COVID-19 front line in Hubei. They also described environmental and psychological factors that provided them with strength and contributed to their resilience.

Specific Coping Strategies

Support from Social Network. Participants noted that individuals from their social network provided emotional support while in Hubei. Participants talked with their colleagues, family, work supervisors or leaders and engaged in group activities such as singing or online group video chats which they found helpful. One participant described valuable peer support provided by a roommate:

> Sometimes I felt very helpless in Hubei. My roommate and I counted on each other. Sometimes I was very scared, but the two of us would talk. Then I would be fine. [I'd feel] we were not that far from home.

Another participant described talking with their partner: "I talked with my partner, like it was for fun. I said I had a dream, about something and something. Then after talking about it, I felt a lot better."

One participant described that the support from colleagues and leadership was emotionally touching during the challenging times:

> The hospital I am affiliated with back home created a big chat group for us. In the group, there was the hospital leadership, various contact persons, and all of us who went to Wuhan. When we felt not so happy, distressed, or there was something that made us feel sad, we would vent about it in the group. The leadership would be very responsive. Now that I think back, it felt like the leadership was online 24 hr for us. Sometimes we would be off work at 2 or 3 a.m., and if we felt sick that day, maybe having a headache, we would say it in the group. We just got used to [saying these in the group]. Whenever we felt bad about something, we would talk about it in the chat, and someone would [respond]. It did not matter what time, the leadership would respond and ask how we were, what's going on. Afterwards the leadership would talk with us for a bit and also tell some jokes. I felt the leaders were quite different from what I thought. I used to think the leadership was always serious and distant, but after going to Wuhan, I saw a warm and gentle side of them.

Exercise or Using Entertainment Media. Aside from gaining support from the social network, participants also individually engaged in activities they felt were conducive to their emotional well-being. Exercise was a frequently mentioned strategy, "I would walk around fast. There was a day that I felt quite distressed, and felt there was energy piled up and suppressed in my body. I needed to get it out, so I used fast walking as the strategy." Using entertainment media such as following TV shows was another reported strategy to self-care.

Passive Strategies. Aside from engaging in active activities, some participants also chose to keep oneself busy and felt working helped with avoiding feelings of distress or worry. Others also said they knew the distress was temporary and just chose to wait it out.

Environmental and Psychological Sources of Strength

When asked about what factors supported them through the challenging times, the HCW frequently discussed a sense of responsibility that motivated them. Organizational and social messages also instilled resilience or a sense of safety in them.

Sense of Mission and Responsibility. As HCW, participants often expressed a strong sense of mission to help the people in Hubei and to help the country overcome the public health crisis. For example, a participant said the sense of mission helped them endure the work challenges in Wuhan:

> As soon as we left for Wuhan and put on the gowns, we were responsible for contributing to the people in Wuhan. There isn't a thing about adapting [to the distress] or not. Everyone was enduring [the challenges]. Everyone is like just one small grass in the big society. [We were not significant as individuals]... We went with a mission, and wearing that gown [as HCW to protect the people] is our responsibility.

Because the COVID-19 outbreak had not ended completely in Wuhan at the time of the interviews, some participants also expressed they would stay longer there if they were allowed:

> I felt anxious, but once I entered the ward, seeing the patients and the colleagues, I would forget about all the [anxiety]... If these kinds of opportunities arise again, I would still volunteer to go... When the country needs me, I just want to step up. I still think about why I am not in the ICU, why can I not continue to stay in Wuhan, doing more for this country... [Before going to Wuhan,] when I saw on the news that HCW worked so hard, and saw the Wuhan people, I just really felt I had to go. This is all genuine. I just felt the sense of calling from within... This country is facing a crisis, and I want to contribute whatever I can.

Trust for the System. Trust for the system also helped the HCW feel safe at work. For example, one participant described feeling they would likely be safe and not contract COVID-19 if they closely followed all the procedures and requirements:

> People all have weaknesses and vulnerabilities, but the fear for COVID-19 is just in your mind. I just thought, since the state told you to wear the isolation gown, the goggles, and the masks, these things must be helpful to you. If you just follow the state's standards and procedures, there won't be problems.

Other participants described feeling they were cared for by the system and that helped alleviating their worries:

> I knew that my family was safe, and my child was taken care of very well. I have nothing to worry about back home. The leadership cared about me, so I just worked without having to worry about other things... I also trust the medical system. Even if I got COVID-19, I believed I would recover. Though that would be the absolute worst scenario.

Camaraderie With Colleagues. Participants often expressed a sense of camaraderie with their colleagues. Although the word "colleagues" has been used throughout this article to provide more straightforward presentation of quotations and explanations, during the interviews, participants often referred to their colleagues using the word *zhanyou* (战友, comrade-in-arms or a fellow soldier), instead of the word *tongshi* (同事, a colleague or a coworker). Participants also used relevant metaphors in their language, as if the HCW were soldiers fighting against COVID-19: "We were all together and that was encouraging for all of us. It was like we were all in the same trench, and one encouragement would instill [the positive energy] in everyone."

Feeling Cared for by Leadership, Institutions, and/or the Country. As discussed under the section Specific Coping Strategies, direct interactions with the leadership helped some participants cope with challenges at work. Outside of these direct interactions, the sense of being cared for was also described as encouraging in general. For example, one participant said,

> The leadership was concerned about us... I felt very touched. Sometimes all of a sudden, I would feel lifted up. It's that moment. Hard to describe... Just felt many people are supporting me from behind, providing help. Then I would feel it's actually not all that hard. It's not that hard.

Support from the institutions or the government was also reflected by various honors that the participants received upon returning home. One participant expressed appreciation for the recognitions by the government, describing herself as receiving extra support even though all she did was to fulfill her duties: "We actually do not need the government, from the national to the district level, to give us all these honors. We do not need the state to do so much for us. It's all within our duty."

Gratitude From the Local Residents. The gratitude that the HCW received from the local residents in Hubei was described as a source of their strength. As one participant said, "I felt people in Wuhan were truly warm-hearted. I would follow some very common care procedures, and they would say thank you so much —thank you so much for coming to Wuhan from that far."

Environment Provided by Family and Friends. Although some participants were worried about their family members at home (also see the section Fear and Worry under Category 2) or had family members or friends feel concerned about their safety, some also described an encouraging environment provided by their family or friends. For example, one participant described that even though they had fears, their sense of duty was strongly reinforced by their family environment and was deeply rooted in their family socialization (as a large family of HCW) during early development:

> I think if anyone says they didn't have fears [about going to the front line] that would be a lie. Everyone had fears; how could they not? Others' lives are lives and ours are as well. But I still volunteered. When I first got the phone call [asking us about going to Wuhan], it was on New Year's Day [of the Chinese lunar calendar], and I was back in my hometown [where I grew up]. Last year I got married, and this year I was going to have my wedding. Following the tradition, starting next year, I would have to spend the New Year at my husband's hometown, so I was thinking this was my last New Year at my own hometown. On the New Year's Day, I got that phone call from

my workplace, and then I cried. But very honestly, my family and myself really had no complaints and didn't want to pull back at all... My husband [was worried], but personally, I just felt I had to go... This is my job. It also comes from my family education. My uncle, aunt, a number of my cousins, they all work in the medical system... My whole family had this education to me when I was growing up: When it comes to [fighting against] diseases or outbreaks, we follow the orders; there is no space for you to hesitate or negotiate. [My motivation is] deeply rooted.

Discussion

During the COVID-19 outbreak in Wuhan, the capital of Hubei and China's COVID-19 epicenter, many frontline HCW dealt with unprecedented stressors and work demands. During this public health crisis, Chinese HCW experienced mental health symptoms reflecting depression, anxiety, and trauma (Du et al., 2020; Kang et al., 2020; Lai et al., 2020; Qi et al., 2020). However, most reports of HCW's experiences have been quantitative, and only one article has used qualitative data to capture HCW's lived experiences in Wuhan (Liu et al., 2020). Liu and colleagues captured experiences during the first few weeks of the outbreak, between February 10 and February 15, 2020, leaving questions about how HCW faired as the pandemic progressed. Moreover, despite HCW's recognized distress and the availability of free mental health services, many HCW did not access these resources (Q. Chen et al., 2020). The current study uniquely captured the experiences of HCW who traveled to Hubei (located in Central China) from a northern Chinese area to respond to this public health crisis and investigated HCW's perceptions of the available mental health services and their reasons for not accessing these services. By presenting Chinese HCW's own narratives, the results of this study provide an important compliment to existing quantitative research identifying coping behaviors and resilience among these frontline HCW and may inform policies and practices related to the resources and needs of frontline HCW in China. As past disastrous events and health crises in China prompted recognition of and improvement in mental health needs and infrastructure, reflections on the system's strengths and weaknesses revealed during the COVID-19 outbreak may contribute to future improvements in service provision and reduced mental health disparities.

HCW interviewed in the current study reported various challenges at work as well as physical and emotional symptoms they experienced under the work demand. Consistent with previous research on HCW in China and around the globe, participants faced long and intensive work hours, PPE shortages, and extreme physical discomfort when using PPE, and handled constant and rapidly changing conditions at the front line (Ong et al., 2020; Park, 2020). Although some participants reported that detailed instructions were helpful to them, some also found that following complex procedures was one of the biggest challenges at work, and instructions were not always available when changes occurred. Under the intensive work demand, participants experienced sleep disturbances, reduced appetite, and various degrees of fear and worry, which are symptoms shared by frontline HCW around the globe (Kramer et al., 2021; Pappa et al., 2020; Qi et al., 2020; Shechter et al., 2020; Spoorthy et al., 2020). The current study uniquely presents narratives from the Chinese frontline HCW, providing insights into their firsthand experience in addition to simple descriptive words or phrases (e.g., anxiety, worry) included in quantitative findings. For example, although frontline HCW's physical discomfort posed by using PPE has been widely reported (Park, 2020), participants in the current study vividly described that wearing PPE could be suffocating, making them fear they might collapse, and that they endured these conditions continuously for several hours, knowing that they were responsible for over a hundred patients. Participants described that leaving the hospital due to extreme personal physical discomfort would be shameful or would increase the burden on their colleagues. These pressures prevented some HCW from engaging in necessary self-care and might reflect potential peer stigmatization of HCW who expressed these needs.

Similar to early findings documenting the underutilization of mental health services among HCW in Wuhan in early February, 2020 (Q. Chen et al., 2020; Kang et al., 2020), none of the participants in this study had utilized mental health services. Although a few stated that they simply did not feel the need for professional services and would otherwise access the resources, it was notable that participants expressed they would need to be completely unable to function ("collapse") to warrant seeking psychological assistance. Such responses mirror concerns raised early during the COVID-19 outbreak in Hubei that HCW refused mental health services despite widespread and visible distress (Q. Chen et al., 2020). However, seeking mental health support early may help prevent HCW from "collapsing," at which point their condition would be more difficult to intervene. Overall, despite the fast establishment and provision of mental health services in China during the COVID-19 outbreak, mental health services might have been underutilized by the HCW in part due to the HCW's perception of the mental health assistance. The Chinese frontline HCW's identity as healthcare providers, as first responders, and as cultural beings in the Chinese societal context may all contribute to their perceptions regarding mental health services (discussed further in the text below).

Despite not accessing professional psychological assistance, participants engaged in coping strategies they found helpful, including engaging social support or exercising. The current study extended previous quantitative research that identified these coping strategies in Chinese HCW (Cai et al., 2020; H. Chen et al., 2020) and HCW around the globe (Babore et al., 2020; Labrague, 2020) by revealing the specific manner in which these activities were helpful for the HCW. Personal and professional relationships were all part of participants' social support network, and communications with colleagues and supervisors appeared particularly important. Notably, previous research about mental health of first responders has found that social support is one of the most robust predictors of positive mental health outcomes (Brewin et al., 2000; Hou et al., 2020; Ozer et al., 2003; Prati & Pietrantoni, 2010), particularly when the support came from superiors at their workplace (Leffler & Dembert, 1998; Regehr et al., 2001). Notably, the Chinese HCW's engagement with their social network for mental health support might also reflect social or cultural understandings of mental health and the roles of close interpersonal relationships. Specifically, psychotherapy has only recently gained recognition and increased acceptance in Chinese society; traditionally, family members and close friends are expected to talk individuals through personal and interpersonal challenges, in the form of *tanxin* (谈心,

"a heart-to-heart conversation about private matters"; Zhang, 2020). There might be a shared understanding among the Chinese frontline HCW and those in their social network that conversations with close others, instead of mental health professionals, would be a prioritized approach for discussing about challenges and distress from work.

In addition to specific coping strategies, participants reported psychological strength derived from various sources, including a strong sense of responsibility, firm trust for the system, and supportive environment provided by their colleagues, the leadership, family, and/or the local residents of Hubei. The HCW's social relationships contributed to resilience beyond specific interactions by adding meaning to their work; for example, HCW experienced camaraderie with their colleagues, felt valued and cared for by the leadership, were appreciated by the local residents, and acted upon education passed on in their family. Some of these relationships (e.g., with colleagues, leadership) not only provided space for *tan-xin*, but also directly provided the HCW's work with meaningfulness in a manner that therapeutic relationships with mental health professionals may not be able to replace.

Recommendations and a Word of Caution

To respond effectively when crises occur, mental health infrastructure needs to already be established with response protocols in place, rather than needing to create and adapt once a crisis has begun (Ma, Nguyen, et al., 2020). The challenges observed in the translation between service availability and accessibility during the COVID-19 pandemic may provide important insights for health systems to continue establishing infrastructures that can better serve future first responders in China. We provide recommendations for future service provision to frontline HCW and consider their implementation in the Chinese societal context.

Given the high prevalence of mental health consequences among first responders in general, frontline HCW may benefit from prevention programs (Kleim & Westphal, 2011; Lanza et al., 2018), including psychoeducation about what symptoms warrant intervention. Further, given that the HCW voiced concerns about burdening the mental health system, additional information about the scope of the mental health services provided to them might ease such reluctance. In addition to increasing mental health service access, cultivating effective support from social relationships may be particularly beneficial to frontline HCW in the Chinese cultural and societal context, as compared to taking a psychopathological approach inherited from medical/psychiatric models of suffering (Luhrmann, 2000). At the same time, given that HCW's individual experiences would inevitably vary, and mental health stigma is widespread among HCW and first responders (Chew-Graham et al., 2003; Drew & Martin, 2021; Harris et al., 2019; Kleim & Westphal, 2011; Lanza et al., 2018; K. Wang et al., 2018), HCW might benefit from further normalization of work challenges, so they could feel less pressured when engaging in self-care or seeking services.

Notably, although the participants reported that their strong sense of mission and responsibility were significant sources of resilience, some caveats of promoting such altruism should be noted. Consistent with results of the current study, previous survey (H. Wang et al., 2020) and interview (Liu et al., 2020) studies also found that the Chinese HCW in Wuhan showed significant professional dedication and expressed the need to place themselves at risk to serve their patients. Wang et al., (2020) highlighted the benefits of HCW's altruism as a mechanism for both reducing their distress and promoting their sense of service toward patients. However, altruism can create additional challenges for HCW. As seen in the current study, participants frequently cited altruistic reasons for enduring extreme discomfort (e.g., taking a break when feeling suffocated in the ward would burden colleagues) or not seeking help (e.g., using psychological assistance would burden HCW in the mental health system). In fact, reasons for not practicing self-care often accompanied expressions that doing so would be shameful (e.g., taking a break would be a shame). Altruistic motivation may also put HCW at higher risk for emotional distress when they have to make difficult medical decisions (Litam & Balkin, 2021). In fact, first responders often receive messages of heroism (Cox, 2020; Freedman, 2004), which may instill a myth that they do not have needs for care or are not vulnerable to psychological impact of trauma (Freedman, 2004; Lanza et al., 2018) and create workplace stigma about seeking mental health support (Castellano & Plionis, 2006; Kleim & Westphal, 2011). Together, these studies imply that altruism messages may be better if paired with messages that emphasize the need for self-care as a mechanism for sustaining their altruistic care for patients.

Future research is warranted to examine the impact of heroism on Chinese frontline HCW and other first responders in their particular social and societal context. It is possible that the concept of altruism and heroism are embedded differently in an individual's identity in different cultural contexts, resulting in differential psychological outcome. As Zhang (2020, p. 113) suggested, when Western-rooted psychotherapeutic techniques are adapted to the Chinese society, which has a more interdependent culture and distinct values of personhood, the concept of healing challenges conceptual binaries between one's psychological versus social problems; healing often involves both "disentangling" oneself from the society to create a space for self-work and "re-embedding" one into the society with one's social role. Therefore, appropriately integrating Chinese HCW's salient social role as care providers into the healing of their own psychological distress or trauma might be necessary for effective intervention adaptations.

Implications in Global Mental Health

China has been growing its global collaborations as it responds to the increasing mental health needs of the public. During the COVID-19 outbreak, mental health practitioners and researchers in China have also called for international collaborations to address the mental health crisis (Xiang et al., 2020). However, as the current study illustrates, individuals' perceptions of mental health services cannot be considered in the absence of their cultural context. In fact, Western conceptualizations of psychopathology may be discrepant from how the Chinese public view psychological symptoms and how they should be discussed and treated (Ma, Capobianco, et al., 2020; Ma et al., 2021) Because stress and coping cannot be examined in the absence of cultural context (Wong & Wong, 2006) and psychological services are more beneficial when cultural norms and values are considered (G. C. N. Hall et al., 2016), international researchers and practitioners should attend to the cultural context and knowledge

generated from local individuals with lived experience when working with mental health professionals in China.

As mental health research and practice is increasingly carried out globally, mental health professionals need to attend to the tendency of overgeneralizing research findings based on predominantly Western samples and using Western psychological frameworks as the norm or default. Future mental health research would benefit from incorporating more diverse perspectives and taking collaborative approaches that allow advancement of the field with recognition of both the limitations and merits of locally generated knowledge.

Limitations and Future Work

Several limitations should be noted when interpreting the findings. First, results of the current study were obtained from HCW who traveled to the epicenter of a pandemic from a particular outside province. Their experiences may not generalize to frontline HCW in other areas of the world, particularly if the HCW stayed in the local area and lived with their family. HCW who went to Hubei from other areas of China may also have distinct local lifestyles (e.g., use of dialect, food, weather) or institutional policy implementations that present them with different challenges and resources. However, themes emerged from the current data are consistent with conclusions in previous quantitative findings about HCW in Hubei, which provides confidence that the narratives reported in the current study can likely inform the field about lived experience of HCW who went to Hubei. In addition, collective and national level response to large-scale crises is more common in China than responses restricted to the local level. Results of the study may provide important insights in attending to first responders' wellbeing in the Chinese social context. Future studies should investigate Chinese HCW's experience in larger scale to examine potential similarities and differences among different groups (e.g., location of home city, gender, age, family responsibilities, etc.) and to establish nomothetic research, which would further inform the understanding of and effective service provision for frontline HCW in China, potentially beyond adapting or generalizing Euro American centric theories and practices. Second, the current study is cross-sectional, and only captured experiences of the frontline HCW immediately after their work in Hubei ended. Other studies examining HCW responses during the COVID-19 crisis within and outside China have also focused on the early stages of the pandemic (Labrague, 2020). However, research about frontline HCW during previous public health crises showed that mental health symptoms may begin later or worsen over time (H. Hall, 2020). Future research is warranted to examine longitudinal changes of the HCW's psychological health, despite their coping strategies and resilience that have allowed them to manage distress during the frontline work. Third, because none of the HCW in the current study reported having sought mental health services, their experiences likely differ from those who did access psychological assistance. Those who accessed mental health services may have had experiences different from those captured from the current sample, including different work circumstances, different support systems, or different prior experiences or perceptions of the mental health system. Future research should also examine experiences of those who did access mental health assistance, which would provide further insights about strength and limitations of mental health service provision to HCW during the COVID-19 outbreak in China.

Conclusion

The current study is one of the few which reported Chinese frontline HCW's challenges, perception of mental health services, and resilience during the COVID-19 outbreak in Hubei using the HCW's own narratives. The frontline HCW encountered challenges posed by long and/or intensive work hours, difficulties related to PPE, complicated procedures, and rapid changes at work. Under the intensive work demand, many experienced physical and emotional symptoms including sleep disturbance, reduced appetite, and various anxiety symptoms. However, none of the participants reported accessing mental health services available to them, citing reasons such as that their self-help was sufficient, that they would need to "collapse" before psychological assistance was warranted, or that they did not want to burden the mental health providers who may be HCW similar to themselves. In order for mental health services to be truly accessible to the HCW and reduce mental health disparities among them, the design and implementation of the services need to continuously consider the HCW's perception of psychological issues and related services. The frontline HCW's identities as healthcare providers and first responders may both create barriers to service access. Mental health service provision to first responders in the Chinese cultural and societal context was discussed, highlighting unique challenges facing the reduction of mental health disparities in China.

When coping with their distress during their work on the front line, participants reported that their social network, including their family, colleagues, and institutional leadership, provided invaluable support. The frontline HCW also engaged in activities such as exercising to alleviate their distress. When asked about factors that provided them with strength during the challenging times at the frontline, the HCW often voiced a strong sense of mission and responsibility, such that it is a healthcare provider's duty to care for the people, especially during a public health crisis when HCW's contribution was urgently needed. The HCW also trusted the medical system such that following instructed procedures would ensure their safety to a great extent. Encouragement from their colleagues, the institutional or governmental leadership, their family and friends, and the local residents in Hubei also resonated with the frontline HCW to generate strength and motivation for them. Although the HCW's various sources of strength are illuminating about their experiences at the front line, it should also be noted that excessive promotion of heroism may increase stigma of help-seeking among first responders and should be communicated with care. As COVID-19 continues to strain healthcare systems around the globe and the HCW that staff them, it is imperative to reduce mental health disparities, especially in areas where mental health resources are lacking. Consideration for the HCW's local cultural and societal context is essential when protecting their psychological well-being and removing barriers to their help-seeking.

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Received February 2, 2021
Revision received May 18, 2021
Accepted May 26, 2021 ■