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ORIGINAL ARTICLE

A descriptive analysis of nurses' self-reported mental health symptoms during the COVID-19 pandemic: An international study

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Abstract

Aim: To describe the self-reported mental health of nurses from 35 countries who worked during the COVID-19 pandemic.

Background: There is little occupationally specific data about nurses' mental health worldwide. Studies have documented the impact on nurses' mental health of the COVID-19 pandemic, but few have baseline referents.

Methods: A descriptive, cross-sectional design structured the study. Data reflect a convenience sample of 9,387 participants who completed the opt-in survey between July 31, 2022, and October 31, 2023. Descriptive statistics were run to analyze the following variables associated with mental health: Self-reports of mental health symptoms, burnout, personal losses during the pandemic, access to mental health services, and self-care practices used to cope with pandemic-related stressors. Reporting of this study was steered by the STROBE guideline for quantitative studies.

Results: Anxiety or depression occurred at rates ranging from 23%–61%, with country-specific trends in reporting observed. Approximately 18% of the sample reported experiencing some symptoms of burnout. The majority of nurses' employers did not provide mental health support in the workplace. Most reported more frequently engaging with self-care practices compared with before the pandemic. Notably, 20% of nurses suffered the loss of a family member, 35% lost a friend, and 34% a coworker due to COVID-19. Nearly half (48%) reported experiencing public aggression due to their identity as a nurse.

Conclusions: The data obtained establish a basis for understanding the specific mental health needs of the nursing workforce globally, highlighting key areas for service development.

Implications for nursing policy: Healthcare organizations and governmental bodies need to develop targeted mental health support programs that are readily accessible to nurses to foster a resilient nursing workforce.

KEYWORDS
COVID-19, global health, health workforce, nursing, nursing shortage, occupational health, occupational health nursing, pandemics

INTRODUCTION

Background

As primary frontline health workers during the COVID-19 pandemic, the world's estimated 27 million nurses experienced the panorama of pandemic response implementation (World Health Organization, 2022). One of the common consequences of the pandemic was its effect on nurses' mental health and well-being (Gadimova et al., 2023; Lake et al., 2021; Molina-Oliva et al., 2023; Saragih et al., 2022), and research studies to date have attributed this as a significant source of burnout in this population (Andlib et al., 2022; Baskin & Bartlett, 2021; Chen et al., 2021; Stodolska et al., 2023). These studies, however, come largely from high-income countries with adequate research capacity to examine the phenomenon in action (Catton & Buchan, 2023; Galanis et al., 2021; Lin et al., 2022; Pogorzelska-Maziarz et al., 2023; Saragih et al., 2021, 2022).

Globally, mental health and its associated services are understudied, yet have gained new significance as a population health issue in a post-pandemic world. Occupationally specific statistics about mental health conditions' incidence and prevalence are also difficult to derive, as most data are national level and not differentiated by healthcare professional cadre (Bruckner et al. 2011; World Health Organization, 2021). Health workforce and occupational health data collection and reporting limitations inherent in many countries contribute to this gap (World Health Organization, 2021). The International Council of Nurses' 2022 report was one of the first to capture the existing capacity of the global mental health nursing workforce and noted the aforementioned data gaps (Stewart

et al., 2022). The report further underscored the importance of capturing occupationally specific mental health data about the nursing workforce to develop organizational interventions and policies to mitigate the work-related stressors experienced by nurses and their longer-term consequences on mental health.

Study aim

The objective of this study is to describe the self-reported mental health of nurses from 35 countries who worked during the COVID-19 pandemic.

Study significance

This study is one of the first to establish occupationally specific statistics about nurses' self-reported mental health and could serve as a basis for developing policies that improve support systems for them. Although additional analyses are needed to elucidate factors that contribute to the mental health and well-being of the nursing workforce, the descriptive work of this study illuminates the substantial mental health burden experienced by nurses during the COVID-19 pandemic on a global level and the lack of mental health services provided by the health care organizations employing them. This study, therefore. serves as an urgent call to attention and action for policymakers and other key stakeholders to take the steps necessary to provide adequate mental health services and support to the nursing workforce.

METHODS

The Global Consortium of Nursing and Midwifery Studies' (GCNMS) ongoing research examining the long-term effects of the COVID-19 pandemic on the nursing and midwifery workforces globally generated the study's data. The GCNMS is an international research consortium founded in late 2020 and today is comprised of 82 countries. Its current study is examining the long-term effects of the COVID-19 pandemic on the nursing and midwifery workforces using multiple methods. Each country team is led by a nurse or midwife or when the country lacks research capacity within the professions, the country lead is a partner with experience conducting non-physician health workforce research. While midwives are included in the parent study, they are not included in these analyses.

Research design

For this analysis, a cross-sectional design guided by methods previously developed by the principal investigator structured this study (Squires et al., 2022). This study reports the quantitative findings of questions associated with the mental health section of the 75-item instrument from the parent study from data collected between July 2022 and October 2023. This period reflected the late stages of the COVID-19 pandemic and most participants had worked for two to three years under pandemic operating conditions. The reporting of this study was guided by the STrengthening the Reporting of Observational Studies in Epidemiology (STROBE) for quantitative findings (von Elm et al., 2008).

Data collection instrument

The study's overall instrument was developed collaboratively with the teams and includes a comprehensive demographic profile. Questions were developed specific to the COVID-19 pandemic response implementation context and informed by the global literature around factors known to influence nurses' role implementation more broadly (Demirci et al., 2021; Schroeder et al., 2020; Squires et al., 2022; von Vogelsang et al., 2021). Country teams contributed to the design, format, and structure of how the study's questions were phrased in the instrument. This was an important step for ensuring that the translation of study questions into the study's languages was as accurate as possible. Professional and machine translations of the questions were made from English into 26 languages. All teams verified translations through content validation approaches (Squires et al., 2013). Teams may exclude demographic questions considered culturally inappropriate to ensure the cultural relevance of the instrument.

Demographic information collected from participants includes age, gender identity, sexual orientation, professional role, years of experience, geographic setting (urban vs. suburban vs. rural), practice setting, employer type, employment status, and membership in a professional union. Except for age and gender identity, all demographic variables were collected categorically. Respondents could enter free text to report their age and gender identity. Data collected regarding participant mental health include experiences of anger and aggression from the public, self-reported burnout, self-reported mental health symptoms (i.e., anxiety, depression, sadness, irritability, fatigue, difficulty concentrating, and feeling overwhelmed), and self-reported coping strategies. Contextual events, such as personal losses of friends, family members, and coworkers were also assessed. Data for self-reported burnout, mental health symptoms, and coping strategies were collected using Likert-type responses. Participants were asked to compare their pre-pandemic practices to those they had used during the pandemic.

For the mental health section of the instrument, two measurement challenges emerged. First is the lack of standardized mental health measures available for all of the study's languages. Few standardized measures of burnout are available in languages other than English, and the Maslach Burnout Inventory has multiple issues associated with its translation (Squires et al., 2014). The second is variation in mental health service availability and which types of providers were available by country (World Health Organization, 2021). To address

these issues, the teams opted for a self-report approach that asked about experiences of anxiety and depression (work vs. home), self-care practices, social support availability (e.g., personal relationships), burnout self-assessment, and mental health services access assessment guided by the 2020 World Health Organization (WHO) Mental Health Atlas (2021). We asked participants to differentiate symptoms of anxiety and depression between work and home as we hypothesized some nurses may have experienced stress differently in both locations due to personal factors associated with household composition and other factors.

Sample and setting

Nurses who worked in any role (e.g., frontline clinician, administrative, educational, etc.) since March 2020 and cared for a patient with COVID-19 infection were eligible to participate in the study. While the study includes midwives, for this paper only the results from nurses were included in the analyses. Entry-level nursing students were not eligible to participate. Research leads for each consortium country were encouraged to collect data from at least 300 nurses in their country in order to facilitate analyses and comparisons across countries. The minimum sample size was developed in consultation with the statistical lead for the project (SJ), a study coauthor with a PhD in mathematical epidemiology. The $n = 300$ sample size was established to be able to discern outliers from an international average with binomial control limits and allows the research team to conduct international comparisons despite varying sample sizes. For the purpose of this descriptive analysis of preliminary findings, any country with data from at least 30 participants was included in the analysis.

Data collection

Most countries in the study do not have adequate nursing workforce data or contact infrastructure to conduct random sampling; therefore, to standardize the sampling across all countries, we used "opt-in" approaches. "Opt-in" approaches to survey research allow the potential respondent to choose to participate or not and are recruited through various recruitment approaches, including convenience and network sampling (Callegaro & Disogra, 2008; Mercer, 2023). Therefore, convenience and social networking sampling using "opt-in" approaches were used by the teams to collect data, an approach commonly used for large-scale workforce studies during the COVID-19 pandemic (Firew et al., 2020; Havaei et al., 2021; Szczerbińska et al., 2023; Tripathy et al., 2021). Given the exploratory nature of the research, a specified study size was not predetermined. The target sample size of 300 participants would, however, support validation analyses of study instruments. Nonetheless, targets were kept flexible based on the nursing workforce population in a given country.

Teams, therefore, used any combination of recruitment via social media (e.g., Facebook, LinkedIn, Twitter, etc.), secure communication networks (e.g., WhatsApp, Telegram, etc.), and in-person recruitment by posting or sharing a common study link that also had a QR code to scan. Data collection occurred anonymously through the Qualtrics XM online survey system. IP addresses are anonymized per European Union standards of respondent deidentification and responses from the same IP addresses were blocked to prevent bots from accessing the survey. The system assigned a unique identifier to each participant for tracking purposes. All participants had the option to answer "prefer not to say" or "not applicable" to any question.

Ethical considerations

Initial institutional review board approval occurred via the PI's home institution (IRB FY2020-4040). The following countries provided independent Institutional Review Board (IRB) approval: Bangladesh (NIA-F-2018-09); Cambodia (IRB# 098 NECHR); Costa Rica (CEC-468-2021); Georgia (IRB#2022-066); Ghana (NHRCIRB417); Italy (Institutional Review Board, Department of Medicine, University of Udine, #114_2022); Kosovo (The Kosovo Chamber of nurses, midwives, and other health professionals, Nr.04/L-150); Lithuania (Lithuania University of Health Sciences, Nr. BEC-D-02); Mongolia (Mongolian National University of Medical Sciences, #2021/3-06); Poland (Bioethics Committee of the Jagiellonian University no. 1072.6120.346.2020); Qatar (MRC-01-22-580); Thailand (Research Ethics Committee, Faculty of Nursing, Chiang Mai University, #2023-EXP016); and Turkey (Ethical Board of Istanbul University-Cerrahpasa, No.2022/420). Korea used the study's questions for a separate study and shared the data for this paper. The remaining countries in this study accepted the US IRB approval in accordance with their country's requirements.

All survey responses for the study were collected anonymously. Prior to beginning the electronic survey, participants were required to read an information sheet in their preferred language regarding the survey that clearly outlined the study purpose, the voluntary nature of the survey, what was being asked of participants, and any risks and benefits associated with the study. Participants were required to acknowledge that they had read the information and consented to participate in the study prior to beginning data collection. Survey responses and raw data were stored in password-protected survey and electronic file management systems that were only accessible to members of the research team at the GCNMS.

Funding statement

This study was funded in part by a New York University Mega Grant. Funds were used to offset costs related to recruitment

and data collection in GCNMS partner countries with priority given to teams from LMICs.

Data analysis and synthesis

For inclusion in this analysis, country teams that had 30 participants who had completed at least 90% of the questions in the mental health section of the instrument were included. Missing data were treated as "not answered" by the participant and were included in the statistical analysis. The number of participants with missing data for each variable of interest is reported in the study tables. Descriptive statistics were generated from the data using R version 4.3.1 statistical software. Inferential statistics were not completed as data collection is ongoing and larger sample sizes are needed to conduct these analyses.

RESULTS

At the time of this paper's submission, a total of 35 out of 82 country teams met the minimum sample requirements for inclusion in the analysis, resulting in a total sample size of 9,387 nurses, with 72% of participating countries classified as low- or middle-income. Teams that have yet to contribute data are either a) in the process of obtaining ethics approval in their countries or b) had recently begun to collect data and did not have a sufficient number of responses to include in the analyses.

Table 1 provides the demographic breakdown of participants. The majority of participants were female, with a mean age of 38 years, and who were educated at the bachelor's degree level (51%). Most were working full-time (58%) in frontline care delivery roles (61%) in hospitals (59%) found in the public sector. About 57% had 15 or fewer years of work experience in nursing. Almost one-third (30%) of participants reported being members of a labor union.

Contextual events potentially triggering mental health symptoms included personal and professional losses during the pandemic, experiencing aggression from the public, and self-reported rates of burnout related to both work and personal factors. One in 5 nurses lost a family member, 35% lost a friend, and 34% reported losing a coworker due to a COVID-19 infection. Almost half of the participants (48%) reported experiencing aggression from the public during the pandemic because of their identity as a nurse.

Table 2 includes nurses' self-reports of mental health symptom frequency differentiated between their experiences at work vs. home. Reported experiences of mental health symptoms were consistently higher at work compared with at home. Percentages of symptoms reported at work ranged from almost 21% for depression to about 57% for feeling tired, whereas approximately 19% and 53% of respondents endorsed experiencing these respective symptoms at home. The most commonly reported symptoms experienced at work were feeling tired (57%), anxiety (44%), and feeling over-

TABLE 1 Participant demographics ($n = 9387$).

Demographic	N	%
Age in years		
Mean: 37.7 (SD ± 11.9)	$n = 9387$	–
Median: 36		
Role		
Practitioner or frontline worker	5703	60.8
Educator	599	6.4
Management/administrator	1011	10.8
Other	579	6.2
Did not answer	1495	15.9
Education		
<Bachelors	1288	13.7
Bachelors	4817	51.3
Graduate	1534	16.3
Prefer not to say	257	2.7
Did not answer	1491	15.9
Gender		
Woman	6858	73.1
Man	890	9.5
Something else	11	0.1
Prefer not to answer	4	< 0.1
Did not answer	1624	17.3
Sexual orientation[a]		
Bisexual	67	0.7
Heterosexual	4229	45.1
Homosexual	127	1.4
Other	196	2.1
Prefer not to say	238	2.5
Did not answer	4540	48.4
Years of work experience		
0–3 years	1761	18.8
4–6 years	1303	13.9
7–10 years	1143	12.2
11–15 years	1175	12.5
16–20 years	701	7.5
21–25 years	605	6.4
26+ years	975	10.4
Prefer not to say	239	2.5
Did not answer	1485	15.8
Place of work		
Ambulatory/outpatient care	308	3.3
Home health care	108	1.2
Hospital	5546	59.1
Primary or community-based care	848	9.0
Staffing agency	34	0.4
Other	467	5.0
Prefer not to say	177	1.9

(Continues)

TABLE 1 (Continued)

Demographic	N	%
Did not answer	1899	20.2
Union member [a]		
Yes	2795	29.8
No	4683	49.9
Did not answer	1909	20.3
Type of employer [a]		
Public	5116	54.5
Private	1364	14.5
Not-for-profit	480	5.1
Nongovernmental organization	112	1.2
Other	157	1.7
Prefer not to say	251	2.7
Did not answer	1907	20.3
Employment status		
Full-time	5393	57.5
Part-time	568	6.1
Per-diem	343	3.7
Contract	864	9.2
Other	732	7.8
Did not answer	1485	15.8
Geographic location [a]		
Urban	5937	63.2
Suburban	614	6.5
Rural	733	7.8
Prefer not to say	312	3.3
Did not answer	1791	19.1
Pandemic losses[b]		
Family member	1874	20.0
Friend	3266	34.8
Coworker	3197	34.1
Experienced aggression from public		
Yes	4545	48.4
Not sure	664	7.1
No	3723	39.7
Prefer not to say	440	4.7
Did not answer	15	0.2
Self-reported burnout		
Reported self as "burned out"	192	2.0
Reported some burnout symptoms	1519	16.2
Report as not burned out	6045	64.4
Did not answer	1631	17.4

Note: Percentages may not add up to 100% due to rounding.
[a]Not asked in all countries.
[b]Percentages reflect the proportion of the total population who reported pandemic losses.

TABLE 2 Self-reported mental health symptoms experienced at work vs. home.

Anxiety		Depression		Feeling overwhelmed		Feeling sad frequently		Difficulty concentrating		Feeling tired		Feeling irritable	
Work	Home	Work	Home	Work	Home	Work	Home	Work	Home	Work	Home	Work	Home
44.1%	33.8%	20.9%	19.3%	40.5%	27.1%	36.7%	28.1%	23.3%	19.9%	56.8%	52.8%	27.9%	25.6%

Note: Results reflect those answering "Yes" to the questions. A breakdown of country-level responses can be found in Supporting Information Table S1.

whelmed (41%). Other symptoms related to anxiety and depression reported by nurses at work included feeling irritable (28%), having difficulty concentrating (23%), and feeling sad frequently (37%). At home, the most commonly reported symptoms were feeling tired (53%), anxiety (34%), and frequent feelings of sadness (28%). Feelings of depression, either at work (21%) or at home (19%), were the least reported symptoms, followed by difficulty concentrating (23% work, 20% home).

Frequencies ranged widely between countries, likely reflecting cultural factors associated with coping with psychological stressors or stigma related to mental illness. Supporting Information Table S1 provides the country breakdown of the results. Further, despite a substantial number of participants endorsing experiencing adverse mental health symptoms either at work or at home, only 2% of the sample described themselves as being "burned out" overall; yet an additional 16% reported having some symptoms of burnout.

Reports about self-care practices offer additional insights into how nurses coped with mental health stressors and are outlined in Table 3. Most respondents reported that, compared with how they were caring for themselves prior to the COVID-19 pandemic, they improved their engagement in exercise, healthy eating habits, spiritual practices, engaging in new supportive relationships, and talking with family. Less than 10% of respondents reported less engagement in self-care practices. It is notable that most nurses did not seek out support from online communities, turning largely to family, friends, and coworkers for support. Supporting Information Table S4 provides the country breakdown, which offers insights into cultural leanings toward self-care practices.

Access to mental health services results are reported in Supporting Information Table S2. A plurality of nurses (43%) reported their employer did not have adequate mental health support services to address their needs during the pandemic, while 24% reported that their employers adequately provided for their mental health service needs. The majority of respondents reported they did not seek professional help for their mental health symptoms, while a little over a quarter of participants reported they did seek care. Among the 27% of participants who sought help for their symptoms, psychologists were the most frequent source of help. As with the other outcomes described, country-level variation was observed in both employer-provided mental health services and respondent health-seeking behavior. Supporting Information Table S3 provides the country breakdown of where nurses sought help and from whom.

TABLE 3 Comparing self-reported self-care practices before and after the pandemic.

	Exercise	Eating habits	Spiritual practices	New supportive relationships	Talking with family	Support from online communities
Better or more	37.9% ($n = 3553$)	37.8% ($n = 3552$)	35.5% ($n = 3334$)	32.2% ($n = 3025$)	48.7% ($n = 4576$)	22.1% ($n = 2074$)
About the same	27.9% ($n = 2623$)	37.6% ($n = 3529$)	30.3% ($n = 2847$)	34.0% ($n = 3188$)	31.5% ($n = 2957$)	28.1% ($n = 2637$)
Worse or less	9.5% ($n = 897$)	7.0% ($n = 659$)	6.3% ($n = 590$)	8.2% ($n = 768$)	5.4% ($n = 510$)	7.4% ($n = 691$)
Do not use	10.9% ($n = 1025$)	5.1% ($n = 478$)	14.4% ($n = 1352$)	11.8% ($n = 1103$)	2.9% ($n = 274$)	28.0% ($n = 2632$)
Prefer not to say	4.6% ($n = 436$)	3.3% ($n = 306$)	4.3% ($n = 403$)	4.9% ($n = 456$)	2.5% ($n = 232$)	5.5% ($n = 518$)
Not answered	9.1% ($n = 856$)	9.2% ($n = 863$)	9.2% ($n = 861$)	9.0% ($n = 847$)	8.9% ($n = 838$)	8.9% ($n = 835$)

Note: The percentage of responses may not add up to 100% due to rounding.

DISCUSSION

Study limitations

The first limitation of the study is associated with the convenience sampling approaches. Since data on the nursing workforce can vary widely in its quality and any category of nurse can be included in those data (e.g., nursing assistant),

the true population of the nursing workforce can be difficult to determine (World Health Organization, 2022). The sampling approaches reflect this and to check for representativeness, the teams compare the demographic profiles of participants to their country statistics to see if there are substantive differences. Other than a slightly higher percentage of bachelor's prepared nurses in the sample overall, it does appear representative, at this time, of most countries. The use of non-random sampling approaches, however, may limit the generalizability of study findings.

In addition, due to variations in sample sizes, inferential and comparative analyses between countries were not possible for this paper but are planned for future studies. Given the different stages of study implementation by teams, some regions of the world are underrepresented, and findings may or may not apply to them. Since most of the questions were developed for the purposes of this survey, they had not been previously psychometrically evaluated but will be once data collection finishes for all countries. Nonetheless, the acceptance by the teams of the face validity of the format of how questions were asked is a first step toward validation.

Lastly, since data collection occurred in the later stages of the COVID-19 pandemic, there is the possibility of recall bias related to events that may have happened earlier in the pandemic period. Survey items were phrased to cue participants to reflect on the pandemic period as a whole in an effort to provide context for their responses. For the mental health and self-care items included in this paper, participants were not asked to recount specific instances but rather to reflect on changes in their mental health and self-care practices compared with before the pandemic. Despite the potential for recall bias, the substantial proportion of respondents reporting adverse mental health symptoms even in the later stages of the pandemic suggests that mental health sequelae are an important consideration for nursing workforce well-being.

For some partner countries, this study represents some of the first nursing workforce research conducted in the country, thus the study was exploratory in nature with respect to methods of recruitment and data collection. The involvement of nursing and health services researchers in participating countries ensured that survey items and study information were translated and presented in ways that were appropriate for each country's context. Country partners also had the ability to use recruitment strategies that were most appropriate for their setting and context and were encouraged to document the strategies used to inform future research and data collection efforts in these countries.

Discussion of results

Results from this study present some of the first occupationally specific mental health data for the global nursing workforce that includes low- and middle-income countries (LMICs). It further reinforces the findings from the World Health Organization's and World Health Professions' reports on the toll of the pandemic and adds country-specific details. Moreover, results offer a baseline snapshot of the pandemic's impact on the mental health of the nursing workforce after three years of intense working conditions. The staggering personal losses of friends, family, and coworkers and their effects on nurses' mental health should not be underestimated, especially given the increased rates of deaths by suicide among nurses living in high-income countries (Davis et al., 2021; James et al., 2023; Rahman & Plummer, 2020). The findings are consistent with other nationally focused studies of the mental health of nurses during the pandemic (Andlib et al., 2022; Asa et al., 2022; Chen et al., 2021; Endacott & Blot, 2022; Fontanini et al., 2021; Gadimova et al., 2023; Halcomb et al., 2021; Khanal et al., 2020; Lake et al., 2021).

The gap in mental health services access is not a surprising finding and reflects the overall lack of funding for and capacity to deliver mental health services in most countries around the world (World Health Organization, 2021). Nurses' reports of who they accessed for mental health services do appear aligned and consistent with available resources reported in the 2020 WHO Mental Health Atlas and further reinforce the findings from the ICN report on nursing workforce capacity building opportunities for nurses in mental health services delivery (Stewart et al., 2022; World Health Organization, 2021). As the pandemic has sensitized many to the importance of mental health, the findings from this study further support the need for additional investments in capacity building for mental health services delivery and developing nursing-specific support services. Said systems should consider nurses' tendency to compare symptoms with coworkers as a way to "normalize" them and a professional culture that can normalize self-sacrifice at the expense of becoming burned out.

The reported incidence of mental health symptoms, including difficulty concentrating, fatigue, and so on, occurring in the workplace suggests that there may be an increased risk for patient safety issues to arise in the short term after the pandemic or longer term depending on the depth of trauma experienced by nurses. Previous research has established that nurses who are distracted or experiencing mental health symptoms at work may risk missing care or committing an error in care delivery (Labrague et al., 2021; Sugg et al., 2021; von Vogelsang et al., 2021). These findings suggest that healthcare organizations without adequate mental health support for nurses may be at greater risk for increased rates of adverse events in the post-pandemic period. Organizational policies, therefore, should be updated to reflect interventions that can mitigate these risks. Future studies should also differentiate how symptoms carry over between work and home.

Findings about burnout are interesting and are in contrast to the current narrative of widespread burnout in the nursing workforce globally (Catton & Buchan, 2023). The results suggest that burnout may be lower overall than reported, although further analyses with larger sample sizes are needed. The high proportion of participants from LMICs, however, may be influencing these findings, as economic opportunities for nurses may be more limited than in high-income countries. Nurses in LMICs would thus need to keep working to

support themselves and their families and may not be able to acknowledge they are burned out.

Finally, prior to the pandemic, research had consistently found that nurses were not always the best at self-care practices (Jo et al., 2023). The changes reported by nurses to their self-care practices, largely for the positive, suggest that nurses, given the intensity of the pandemic's working conditions, may have improved self-care activities in an effort to endure the length of the crisis working state wrought by the pandemic. They also indicate that nurses can identify their own self-care needs and are likely to act upon them using health-promoting interventions. At the same time, the increased engagement in these self-care practices may reflect an increased need to cope with adverse mental health symptoms experienced at work. As such, policies promoting nurses' self-care and wellness practices can help reinforce support systems for their mental health. Nonetheless, promoting self-care will not address the scope of the problems identified in this paper. Stigma reduction associated with mental illness and access to mental health services are critical interventions requiring policy responses at the organizational and national levels. While further research is needed to better understand the relationship between work-related experiences of adverse mental health symptoms and the use of self-care strategies, employers and healthcare organizations should consider interventions and policies that address the underlying factors that contribute to these adverse work experiences.

With the current study ongoing, future analyses will be able to examine the significance of relationships between mental health and other factors that may have affected nurses during the pandemic. These include, but are not limited to, economic factors, the work environment, occupational health risks, intention to migrate, and vaccine uptake. Future analyses may also be able to distinguish response patterns associated with culture, region, and other demographic factors that will provide additional insight into their effects on nurses' mental health in the context of pandemic response implementation and the longer-term effects in the post-pandemic period. This will allow countries to customize policy interventions based on local needs and tailor them for cultural considerations of their workforce. Nonetheless, with the nursing workforce diversifying thanks to international migration, many countries and employing organizations may need to update their policies to accommodate the needs of a multicultural workforce.

CONCLUSION AND RECOMMENDATIONS

Given that these results reflect the final year of the COVID-19 pandemic and the beginnings of the post-pandemic recovery phase, they provide signals about the long-term mental health of the global nursing workforce. With approximately one-quarter of the participants experiencing significant mental health symptoms, it is not surprising that nurses (when the opportunity arises) are moving within the field to lower stress nursing roles, leaving their positions or countries for better working conditions, or leaving the profession altogether. This poses a threat to health system sustainability worldwide, with the impact likely to affect the most vulnerable systems that were already stretched and stressed to their limits prior to the pandemic. Nonetheless, the experiences of nurses highlighted in this study offer insights into how countries have failed to support their mental health. Said investment will only strengthen the capacity of human resources for health more broadly to face future pandemics and reduce vulnerabilities within the workforce itself.

The findings also signal the need for occupationally specific epidemiological monitoring of mental health issues among nurses and other health care professionals. These data would help to distinguish the incidence and prevalence of mental health conditions among workers in high-intensity human-centered occupations from the general public as well as other fields.

Finally, for future pandemic response plans, investments in mental health services and workforce capacity building are sorely needed for that issue alone. Strengthening mental health services will help countries become more prepared to respond to future pandemics and their consequences. For pandemics that last as long as the COVID-19 one, this will be crucial for sustaining the frontline workforce and creating more resilient health systems.

IMPLICATIONS

That substantial numbers of nurses have experienced and continue to experience adverse mental health symptoms at work related to the COVID-19 pandemic has important implications for both nursing practice and policy. As persons at high risk for experiencing adverse mental health, sustaining the nursing workforce requires interventions that reduce this risk. Experiences of anxiety, depression, sadness, and feeling overwhelmed while at work can adversely impact a nurse's ability to focus on their clinical work and may influence their ability to successfully monitor and manage patient care. Additionally, the finding that 70% of nurses did not feel their employer provided adequate mental health support suggests there is a need for healthcare organizations to develop more robust mental health services and support for employees.

Addressing these issues requires addressing the deficits found in the work environment and organizational culture changes. Organizations need to consider the role of the clinical work environment and take steps to support the psychological safety of nurses and other frontline workers at the point of care. Professional organizations and governments can hold care delivery organizations accountable through regular performance reviews. For some countries, this will require technical capacity investments to develop the expertise needed to conduct this work. For others that have the existing capacity to do so, it will involve changing existing accountability practices.

AUTHOR CONTRIBUTIONS

Study design: Allison Squires, Juana Jimenez-Sanchez, Maria Anyorikeya, Theresa P. Castillo, Dulamsuren Damiran, Shanzida Khatun, Jakub Lickiewicz, Taewha Lee, and Iwona Malinowska-Lipien. *Data collection*: All authors. *Data analysis*: Allison Squires, Hillary J. Dutton, Maria Guadalupe Casales-Hernandez, Honey Patel, Zhongyue Ma, Lloyd A. Goldsamt, and Simon Jones. *Study supervision*: Allison Squires, Juana Jimenez-Sanchez, Maria Guadalupe Casales-Hernandez, Cornelia Bernal Cespedes, Javier Isidro Rodriguez López, Yesenia Flores, Maryuri Ibeth Arteaga Cordova, Gabriela Castillo, Jannette Marga Loza Sosa, Taycia Ramirez, Cibeles Gonzalez, Teresa Amaya, Jose Luis Guedes Dos Santos, Derby Muñoz Rojas, Lilia Buitrago, Fiorella Jackeline Rojas-Pineda, Jose Luis Alvarez Watson, Mercedes Gómez Del Pulgar, Maria Anyorikeya, Hulya Bilgin, Aurelija Blaževičienė, Lucky Sarjono Buranda, Theresa P. Castillo, Alvisa Palese, Dulamsuren Damiran, Blerina Duka, Vlora Ejupi, Shanzida Khatun, Virya Koy, Seung Eun Lee, Jakub Lickiewicz, Jūratė Macijauskienė, Iwona Malinowska-Lipien, Apiradee Nantsupawat, Abdulqadir J. Nashwan, Fadumo Osman Ahmed, Aylin Ozakgul, Yennuten Paarima, Veronica E. Ramirez, Alisa Tsuladze, Zeliha Tulek, Maia Uchaneishvili, and Margaret Wekem Kukeba. *Manuscript writing*: All authors provided feedback on and confirmed manuscript content. *Manuscript revisions*: Allison Squires, Hillary J. Dutton, Virya Koy, Stefania Chiappinotto, Alvisa Palese, Iwona Malinowska-Lipien, Margaret Wekem Kukeba, Maria Guadalupe Casales-Hernandez, and Apiradee Nantsupawat.

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CONFLICT OF INTEREST STATEMENT

No conflict of interest has been declared by the author(s).

PERMISSION TO USE ESTABLISHED SCALES

The Mini Z is a validated, brief tool developed by the Institute for Professional Worklife that can be used to assess the work environment. As per the Institute for Professional Worklife website, "The Mini Z survey is free for use in research and educational capacities." Therefore, the authors had the appropriate permissions to use this scale in their study.

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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