WHAT THE COVID-19 PANDEMIC HAS EXPOSED:

THE FINDINGS OF FIVE GLOBAL HEALTH WORKFORCE PROFESSIONS

Human Resources for Health Observer Series No. 28

Erin Downey, Hoi Shan Fokeladeh and Howard Catton

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Publisher's note:

This publication is aligned with and has been developed under the framework for joint action outlined in the Memorandum of Understanding (MoU) signed by the World Health Organization (WHO) with the five members of the World Health Professions Alliance (WHPA) – FDI World Dental Federation (FDI), International Pharmaceutical Federation (FIP), International Council of Nurses (ICN), World Physiotherapy, and World Medical Association (WMA) – on 8 November 2022.

This report is being published as an issue of the HRH Observer series as it presents a synthesis of evidence from the five WHPA organizations' surveys and reports during the COVID-19 pandemic using the standardized measurement and reporting framework developed by WHO to assess the multidimensional impact of COVID-19 on the health and care workers. While the framework has been utilized by WHO and by other partners and Regions, this is the first assessment of its kind which focuses on the perspectives of the professional associations of health workers, and hence this report can provide useful insights to inform policy responses and priorities to protect, safeguard and invest in the health and care workforce.

Acronyms and abbreviations

APN	advanced practice nurse
CDC	Centers for Disease Control and Prevention (United States of America)
FDI	FDI World Dental Federation
FIP	International Pharmaceutical Federation
HCW	health and care worker
HCWF	health and care workforce
HRH	human resources for health
IAPSL	industrial actions, protests, strikes and lockouts
ICN	International Council of Nurses
ICRC	International Committee of the Red Cross
ILO	International Labour Organization
IPC	infection prevention and control
IYHCW	International Year of the Health and Care Workers
MHPSS	mental health and psychosocial support
MS	Member State
MoU	memorandum of understanding
NDA	national dental association
NNA	national nursing association
PHC	primary health care
PHN	public health nurse
PPE	personal protective equipment
SDG	Sustainable Development Goal
WHA	World Health Assembly
WHO	World Health Organization
WHPA	World Health Professions Alliance
WMA	World Medical Association

Executive summary

As part of the International Year of the Health and Care Workers (IYHCW) 2021 Campaign activities, the World Health Professions Alliance (WHPA) expressed interest in conducting a synthesis of the evidence and knowledge gathered by its five organizations of the two-year impact of COVID-19 on health and care workers (HCWs) globally. The WHPA includes the global organizations representing the world's dentists, nurses, pharmacists, physicians and physiotherapists and speaks for more than 41 million health care professionals in more than 130 countries. Thus, the WHPA can play a key role in providing new insights into the impact of the COVID-19 pandemic as witnessed and responded to by their members globally.

Early in the COVID-19 pandemic, WHO asserted that a holistic assessment of the COVID-19 pandemic's impact is needed and accordingly formulated a comprehensive framework for measurement and reporting that broadly draws upon four main domains. Two domains, 'health' and 'social and well-being,' are central to the individual HCW and two domains, 'availability and distribution' and 'working conditions,' are central to the organizational and working environment. The overarching goal of this holistic framework is to empower countries, global partners and WHO to collectively inform strategies that guide recovery plans, future investments, and further develop the health and care workforce (HCWF) at the national and global levels.

Relative to that, the primary objective of the evidence synthesis (guided by WHO's four domains of interest) is to triangulate data and information generated by the WHPA. It was conducted using information and report summaries from WHPA to generate a comparative secondary analysis of the surveys conducted in the period 2020–2021. No standardized data collection instrument, variable, or question was used across the five organizations. Instead, the organizations gathered data from their respective national professional associations using various instruments and developed reports that discussed either the pandemic specifically or in conjunction with additional priority issues. At least one WHPA organization is represented in 169 (87%) of the 194 WHO Member States (MS). In 42 MS (21%), all five WHPA organizations are represented.

This evidence synthesis describes how the five professions were impacted in common and different ways by comparing the experiences of dentists, nurses, pharmacists, physicians and physiotherapists. The individual organizational findings of the five WHPA organizations inform the five key themes and the subsequent findings and recommendations. The inspiration was to inform future data collection efforts by building upon collective knowledge, data accessibility and question formats that have generalizable applicability to all WHPA organizations.

All WHPA organizations brought a valuable perspective given the comprehensiveness of survey reporting, geographic reach and analysis. For example, ICN had a strong grasp of how interruptions to nursing education will affect the immediate and long-term impacts of workforce shortages. FDI assessed facility ownership (public/private sector) when they assessed the impact of the pandemic on oral health care. World Physiotherapy collected the gender of its survey participants among its physiotherapist members. FIP had an established and comprehensive multi-year data collection process for pharmacists. WMA has a streamlined policy generation process that creates statements, declarations and resolutions for physicians and the medical community.

This evidence synthesis aims to influence the dialogue between policy-makers, non-governmental organizations and public health research stakeholders on diverse priorities related to the support, protection and investment of HCWs during the COVID-19 response and beyond by presenting key findings, messages and calls for action related to HCW protection and future investments. This report intends to expand the understanding of the occupational risks and pervasive workload challenges, highlight the consequences to the HCWF, and explore the need to standardize the monitoring of the HCWs' context during public health emergencies. In conjunction with the WHPA organizational review, the WHO HWF department reviewed this document during its development to ensure alignment with the standardized framework to assess the multidimensional impact of COVID-19 on HCWs and coherence with the relevant WHO documents and policies.

Key findings

Investing in and ensuring access to mental health and psychosocial support (MHPSS) services for HCWs globally is paramount. This includes both individual interventions to support those in need of care, as well as organizational interventions that reduce risk factors, for example the improvement of working conditions, protecting and safeguarding the rights of workers, identifying and reducing barriers to accessing support. HCWs have long been a population at risk of mental health problems due to high-stress environments and poor working conditions. During the COVID-19 pandemic, this risk increased, with personal safety being one of many risk factors for poor mental health in this population. **Fears for personal safety** included lack of occupational protection via personal protective equipment (PPE) and rapidly changing and inconsistent protocols that undermined their feelings of personal safety and could affect patient care.

HCWs interpret the lack of systematic protection mechanisms for their safety and security as being undervalued.

Workload burden, resulting in temporary and permanent departures from service, was extensively reported by nurses as reasons for depressive symptoms, anxiety, fear, inequality and discrimination at the workplace.

The need for HCW representation at high levels of planning, strategy, and decision-making was reported by almost all organizations. The reliance that communities have on HCWs and the reliance that HCWs have on the whole of society to perform their roles must be integrated into immediate and long-term strategies.

Vaccination communication strategies should be dual-purpose, both for this pandemic and other pervasive and long-standing vaccination challenges. ICN found that an enabler for vaccine coverage was to utilise the presence of nurses through public information channels that strengthen their community integrity and value, including assisting with distributing vaccine recommendations that can "create a better understanding of health and healthcare through the nursing voice."

Providing vaccinations training for HCWs was extensively discussed by FDI (representing dentists) as a primary effort to achieve better coverage across populations when their services had otherwise decreased due to the pandemic.

Guidelines and recommendations for HCWs testing for COVID-19 are available in most countries, however, routine testing of the HCWF is not implemented. FDI and FIP also noted their relevance in community education for their respective professions of oral and pharmacy care.

ICN reported that more than 70% (n=24) of the national nursing associations (NNAs) experienced incidents of violence or discrimination against essential health workers due to COVID-19.

FIP extensively covers vaccination and provides multiple strategies, recommendations and examples in its toolkit that aims to support individual pharmacists with tools for effectively communicating the value, efficacy and safety of vaccines, and for addressing concerns about or the rejection of vaccines. It provides a background on vaccine hesitancy and the main reasons for it as well as ways to address vaccine hesitancy directly with individuals. It also includes examples of pharmacy-based campaigns and information, and guidance on advice for different types of vaccines is also provided.

Interruptions of HCW education were profound. ICN extensively reported the impact of the pandemic on nursing students and their education. Disruptions of undergraduate and postgraduate nursing education were reported in 68% and 56% of countries respectively (n=64). Schools were closed, clinical placements were cancelled or postponed, and some countries are experiencing delays of up to a year.

Societal inequalities across and within countries have been exacerbated during the pandemic and compounded the impact on HCWs in ways of professional uncertainty, fatigue, fear, and temporary or permanent departures from service.

Overarching findings and conclusions from the review

Future surveying of HCWs should include a combined prioritization of the issues discussed herein that anticipate the context of recovery and health systems strengthening through education, advocacy and policy. Suggested topic areas are described in Box 1 but could evolve as per WHPA and WHO priority areas. Future data collection should engage individual reporting expertise from all WHPA organizations.

Box 1. Key areas of consideration for future surveys

- Key demographics and socio-economics
- Impact of the COVID-19 pandemic (infections, deaths)
- Impact on mental health
- Impact on professional practices
- Testing and vaccination coverage
- Repurposing and redistribution
- Public image of the profession
- Government and regional level support
- Coordination support
- Communication campaigns and advocacy
- Registration and regulation
- Reasons for leaving the profession
- Education and training
- Financial implications
- Future of the profession

The consequences of service disruptions need further exploration, including the immediate and long-term impacts on HCWs. Issues of 'repurposing' HCWs to perform other duties may incentivize some to stay within the profession or deter others to leave. Student HCWs as a potential resource for backfilling some service gaps would likely welcome the opportunity to assist in some ways but naturally have limitations in how and what services they can perform. The 2030 pre-pandemic projected shortfall of 18 million health care workers in general and the 10 million nurses specifically have been exacerbated by the COVID-19 pandemic. Strategies to mitigate this shortage are urgently needed. The relationship between service disruptions and the subsequent impact on the temporary or permanent loss of staff is complex.

Retraining staff for 'repurposing' in the context of a global public health emergency is a compelling strategy and requires more extensive and thorough implementation strategies. To address mis- and dis-information campaigns, extensive references are made herein on strategies, such as those used by FIP within the pharmaceutical profession.

Key messages

The COVID-19 pandemic has brought to the fore the urgent need to protect and safeguard HCWs. The COVID-19 pandemic has made clear that the obligations implicit in duty of care extend to the systems which support those personnel. Simultaneously, the need for, and the reliance on, a strong HCWF has been recognized. The HCW is a key mechanism that operationalizes global health policies while ensuring access to health, as a fundamental right, occurs. They must be globally respected and protected.

Deliberate and immediate engagement with HCWs at the national planning, policy and finance levels should occur. Without adequate representation, HCWs will continue to bear a disproportionate responsibility to recover from health emergencies; they will remain in the position of having the responsibility to implement solutions without having the authority to do so.

Systemic strategies to concretely address the chronic violence in the health care settings should be curated and invested in. The exposure to violence, safety and protection concerns and the subsequent mental health and psychosocial impacts on HCWs is multifaceted. Chronic violence that occurs during non-emergency settings exacerbates during emergency situations. Fragmented data collection, fragmented coalitions, and fragmented operational efforts are not enough. Comprehensive HCW protection strategies implemented at the national and local levels are essential. To do so would be a force multiplier in addressing the MHPSS realities of the HCW and the subsequent loss of temporary and permanent departures from service.

The compounding risks to HCWs must be immediately mitigated through (a) proactive not reactive policies; (b) strategies to address secondary and tertiary impacts of fears and fatigue; and (c) resources made available for short- and long-term effects of mental and psychosocial impacts. HCWs are the fundamental resource that bridges health systems from response to recovery to deliver the essential health services and the essential public health functions in pursuit of UHC and global health security.

Data and intelligence needs should be anticipated and strategic planning for emergency risk communication should be integrated in preparedness strategies for health emergencies. Globally, social media has never been more pervasive. With constant flows of information that range in quality and content, the pressure to manage public messaging during health emergency contexts is extreme.

Immunization campaigns should be coordinated. In most countries, health workers are not typically included as a target population group for the national immunization programme. It is necessary therefore to include measurable and realistic immunization targets based on the national immunization plans and gaps in vaccine coverage. Target percentages set by federal governments for immunization rates can serve as a baseline for pharmacy-led campaigns.

The importance of equity stratifiers such as gender, age, level of education, ethnicity, place of birth and/or place of training, civil status and sector of employment to describe the lived experiences of HCWs cannot be understated. For disaggregation by equity stratifiers to become an integral part of policy-making, there needs to be a firm evidence base. This evidence synthesis showed a limited attention to this aspect. Moving forward, this gap will need to be filled.

Enablers and barriers to rapidly achieving high coverage of COVID-19 immunization of HCWs reflect the need to engage anthropologists on a much deeper level. Information and media forces during this unprecedented public health emergency were not anticipated. Lessons learnt from the pandemic are opportunities for prioritizing the issues to address while complementing them with short- and long-term visions of how recovery can strengthen the delivery of essential health services and the essential public health functions, UHC, global health security and future preparedness.

This evidence synthesis is the first of its kind to assess the multidimensional impact of COVID-19 on five major HCW occupations globally. It demonstrates the important role that WHPA can play by contributing to investigate, represent, and create linkages between health systems strengthening and response priorities within the health sector to contribute to the operationalization of HCW protection. The COVID-19 pandemic relentlessly underscored the inequities of access to health as well as how HCWs are disproportionately at-risk during health emergencies. Given the projected HCW shortfall for 2030, WHPA could serve as a health intelligence body that informs global strategy and policy.

Background

As part of the International Year of the Health and Care Workers (IYHCW) 2021 Campaign activities, the World Health Professions Alliance (WHPA) expressed interest in conducting a synthesis of the evidence and knowledge gathered by its five organizations on the two-year impact of COVID-19 on health and care workers (HCWs) globally. The WHPA includes the global organizations representing the world's dentists, nurses, pharmacists, physicians and physiotherapists and speaks for more than 41 million health care professionals in more than 130 countries *(1)*. The WHPA recently signed a historic memorandum of understanding (MoU) with WHO to enhance their joint collaboration on protecting and investing in the health workforce to provide safe, quality and equitable care in all settings. The MoU provides a framework for joint action between the five organizations and WHO on various priority health workforce issues. Thus, the WHPA can play an important role in gleaning new insights into the impact of the COVID-19 pandemic as witnessed and responded to by their members globally. This report synthesizes the evidence from the WHPA data sources and summary reports contributed by their stakeholders to facilitate a descriptive analysis of findings and key messages.

Early in the COVID-19 pandemic, WHO asserted that a holistic assessment of the impact is needed and accordingly elaborated a comprehensive measurement and reporting framework for the multidimensional impact of COVID-19 on HCWs that broadly draws upon four main domains *(2)*. Two domains, 'health' and 'social and well-being,' are central to the individual HCW and two domains, 'availability and distribution' and 'working conditions,' are central to the organizational and working environment. The overarching goal of this comprehensive framework is to empower countries, global partners, and WHO to collectively inform strategies that guide recovery plans, future investments, and further develop the health and care workforce (HCWF) at the national and global levels.

Purpose and target audience

The purpose of this report is to act as an advocacy document to global, regional and national leaders and decision-makers working in the health systems and health workforce domains, sensitizing them about the multidimensional impact of COVID-19 on HCWs, the need to think beyond just infections and deaths, and the importance of investing, protecting and safeguarding this workforce. Hence, addressing the impact of COVID-19 on HCWs should be comprehensive and focus on all the four domains, ensuring not just the health and social well-being of the HCWs, but also their availability and distribution and working conditions. Secondly, it also aims to draw the attention of human resources for health (HRH) planners, policy-makers, program managers, researchers and analysts to the standardized framework developed by WHO to measure and report on the multidimensional impact of COVID-19 on HCWs, and to motivate them to apply the framework to measure impact at national level.

Objectives

The primary objective of the evidence synthesis was to triangulate data and information gathered by the WHPA, guided by WHO's four domains of interest. Five broad research themes were identified, which are outlined as follows:

Theme 1: Occupational and/or psychosocial factors affecting HCWs' morbidity and mortality levels: mainly related to infections, death, extreme stress (post-traumatic) and suicide, increased accidents at work, burnout and other mental health conditions.

Theme 2: HCWs' temporary or permanent departures from service: mainly due to multiple factors (such as, unmanageable workload, long COVID, fears of excess morbidity and mortality given the unpredictable period of the outbreak or emergency situation, among others), and/or other external factors (e.g. social and environmental).

Theme 3: HCWs' access to and uptake of COVID-19 vaccinations: mainly knowledge around vaccination coverage among HCWs; and the main enablers and barriers to rapidly achieving high coverage of COVID-19 immunization of HCWs.

Theme 4: Common causes and key manifestations of industrial actions, protests, strikes and lockouts (IAPSLs): mainly related to the general welfare of HCWs (fair pay, workload, safety, security).

Theme 5: Detrimental consequences of any of themes 1-4 above: mainly evidence related to the delivery and quality of health services i.e., prolonged service disruptions, interruptions in HCW education.

A secondary objective of this evidence synthesis is to provide key messages on the underlying data gathering processes and information sources that are needed to underpin coherent calls for investments in the core objectives of the IYHCW Campaign (Box 2).

WHPA global representation

The WHPA is comprised of five organizations:

FDI World Dental Federation (FDI)
(https://www.fdiworlddental.org/members)

International Council of Nurses (ICN)
(https://www.icn.ch/who-we-are/membership)

International Pharmaceutical Federation (FIP)
(https://www.fip.org/member-organisations)

World Medical Association (WMA)
(https://www.wma.net/who-we-are/members/)

World Physiotherapy
(https://world.physio/our-members)

Each of the five organizations have their member associations posted in the public domain and membership counts can fluctuate. At the time of this comparative analysis, the organizations' global presence across countries, territories and areas ranged from 116 to 146 (average 130) member associations per organization (seen later in Table 4). On average, each professional organization had between 1 and 3 member associations in any given country. Figure 1 depicts the global

Box 2. Objectives of the campaign to support the International Year of Health and Care Workers

representation of WHPA in countries (those darkest in colour have all 5 professions represented and vice versa). Overall, at least one of the five WHPA professions has representation in 180 countries, territories and areas globally. Specifically, at least one WHPA organization has representation in 169 (87%) of WHO 194 Member States (MS) (Table 1), and all five WHPA organizations are represented in 42 (21%) WHO MS (Table 2), which are distributed across all but one WHO region (the Eastern Mediterranean region). Further details of the available data for non-WHO MS with and without WHPA representation are provided in Annex 2.

Figure 1: WHPA global representation

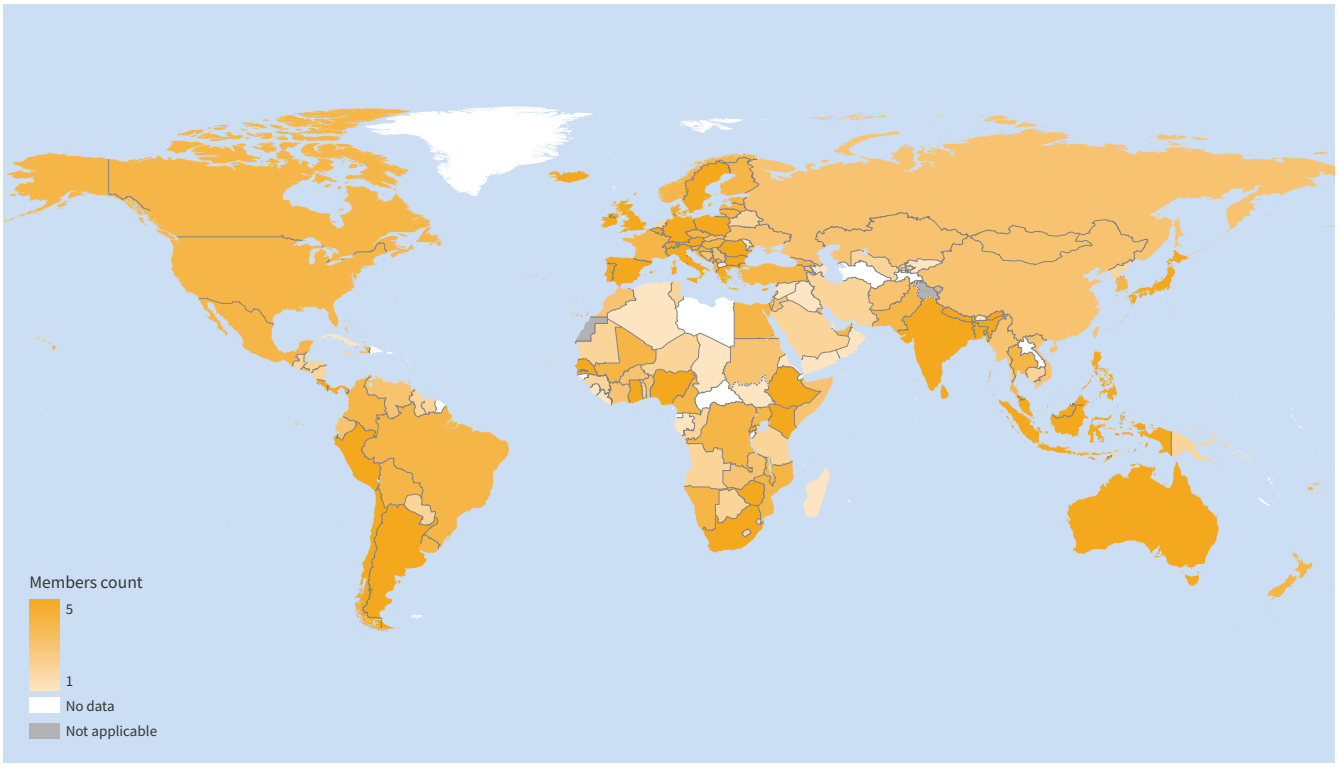


Table 1: Distribution of WHPA member organizations across WHO Member States

WHO Region	No. of WHO MS	No. of WHO MS where at least one of the five professional organizations is represented (%)	No. of WHO MS where all five professional organizations are represented (%)
Africa	47	42 (89%)	8 (17%)
The Americas	35	32 (91%)	5 (14%)
South-East Asia	11	10 (91%)	5 (45%)
Europe	53	50 (94%)	19 (36%)
Eastern Mediterranean	21	19 (90%)	0
Western Pacific	27	16 (59%)	5 (19%)
Total	**194**	**169 (87%)**	**42 (22%)**

Table 2: WHO Member States (n=42) where all five WHPA organizations are represented

Africa (n=8)	**The Americas** (n=5)	**South-East Asia** (n=5)	**Europe** (n=19)	**Western Pacific** (n=5)
Ethiopia	Argentina	Bangladesh	Austria	Australia
Ghana	Chile	India	Belgium	Japan
Kenya	Costa Rica	Indonesia	Bulgaria	Malaysia
Nigeria	Panama	Nepal	Cyprus	Philippines
Rwanda	Peru	Sri Lanka	Denmark	Singapore
Senegal			Germany	
South Africa			Greece	
Zimbabwe			Iceland	
			Ireland	
			Italy	
			Luxembourg	
			Montenegro	
			Poland	
			Portugal	
			Romania	
			Spain	
			Sweden	
			Switzerland	
			United Kingdom	

Note: The WHO Eastern Mediterranean Region has no Member States with all five WHPA organizations represented

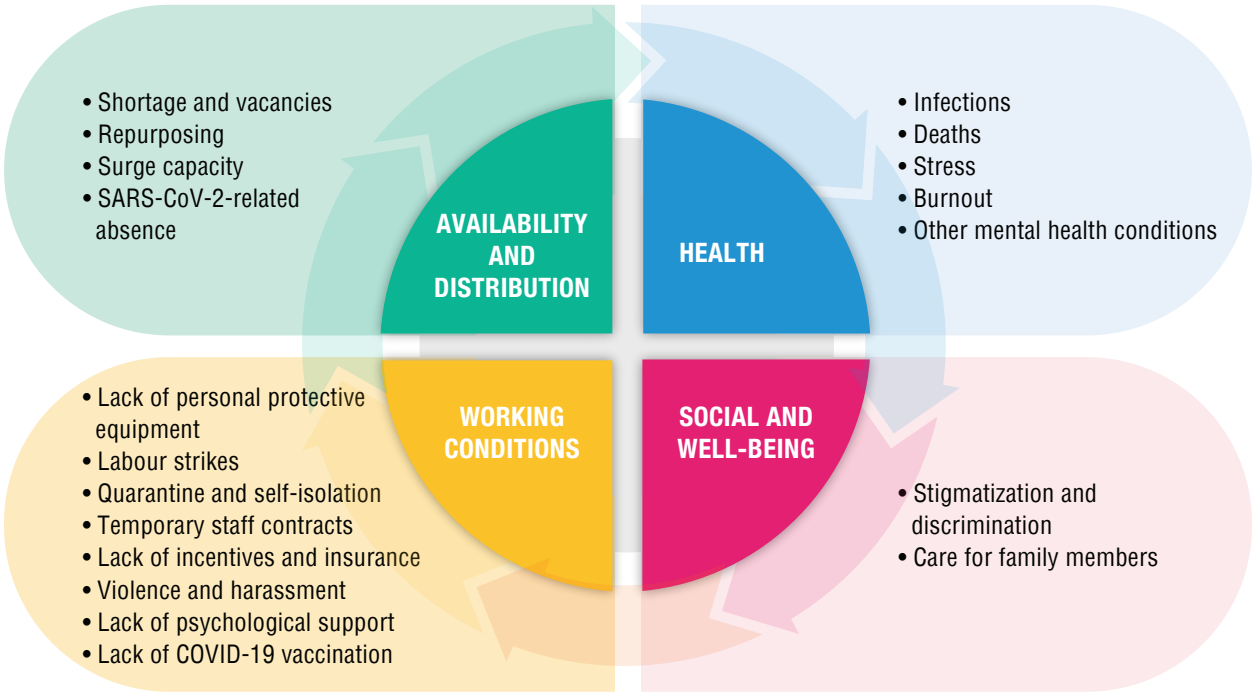
Methods

A conceptual framework to measure the multidimensional impact of the COVID-19 pandemic on HCWs

During the first year of the pandemic, WHO elaborated a conceptual framework to support the standardized measurement and reporting of the multidimensional impact of the pandemic on HCWs' health and social well-being, their working conditions and their availability and distribution (Figure 2) based on emerging evidence *(2,3)*. Two domains, **'health'** and **'social and well-being'**, are centred more on the individual HCW while the two other domains, **'availability and distribution'** and **'working conditions'**, are centred more on the organizational and working environment. These four domains were synthesized from various topics identified in the literature and publications, and are also well-aligned with the health labour market (HLM) framework *(4)* and the measurement dimensions of the National Health Workforce Accounts (NHWA) *(5)*. The presented domains are not meant to be mutually exclusive nor the factors within each to be exhaustive. It is also evident that the interplay of factors outlined in the four domains will vary from one country to the other. For instance, HCWs may be impacted more heavily by a specific domain (e.g. poor working conditions) or a permutation of factors across the four domains (Figure 2).

This framework has since been tested and validated in various country case studies in South America *(6)*, the Caribbean *(7)* and Africa *(8)*.

Figure 2: Multidimensional factors related to COVID-19 that affect HCWs



WHPA surveys and reports

All WHPA organizations maintain active communications with their member associations and this has increased, particularly since the start of the COVID-19 pandemic in early 2020. Given the scale, speed and severity of how the pandemic unfolded, individual WHPA organizations conducted multiple rounds of data collection at different intervals to gain insights into how their respective professions were being impacted, albeit that not all organizations conducted pandemic-specific surveys. A rapid review of literature related to the key priority issues faced by the health occupation group was conducted by the respective WHPA partner organization prior to the development of their respective surveys.

Nine WHPA surveys and reports (shown in Table 3, below) were central to this evidence synthesis. Unique qualities for each of the WHPA organizations' surveys and reports revealed exclusive situational awareness, and specific areas of concern at different points in time that were explored in diverse ways. A few examples are outlined as follows:

- ICN extensively surveyed their national nursing associations (NNAs) by conducting two surveys (in August and December 2020): the initial one focused on HCWs infections and deaths during the pandemic and the second was more comprehensive and included the impact of the pandemic on the nursing workforce and the development of the profession in general. As such, three reports were contributed by ICN who provided the most content on COVID-19 specific impacts and most notably on the mental health and psychosocial state of HCWs *(9–11)*. Comparative descriptive analysis of their data informed many policy briefs and subsequent reporting.

- FDI conducted two surveys of their national dental associations (NDAs) – in May 2020, and a follow-up in December 2020 – to probe on: whether their oral health HCWs had access to receive COVID-19 vaccination as a priority group, whether they were retrained or repurposed as a part of the vaccine-providing workforce, and a deeper-dive into the type of facility ownership (namely public or private sector) the oral health workforce was involved with. In addition, FDI also conducted a global survey for their Vision 2030 for oral health. *(12–14)*.

- FIP conducted a longitudinal analysis of the pharmacist workforce data they held over 10 years *(15)* that could inform the workforce capacity of pharmacies as the pandemic evolved. Data was primarily gathered using a survey of FIP member organizations which included questions on the number of practising pharmacists in the country. Pharmacist capacity data collection occurred at four successive time points (2006, 2009, 2012 and 2016), with 75 countries having contributed data for at least two time points. In addition, FIP conducted a follow-up global survey in 2020 to collect essential workforce data, including a particular focus on the community pharmacy workforce *(16)*.

- WMA conducted "COVID-19 talks" interviews with more than 20 associations in the early stages of the pandemic to inform the medical community of foreboding health emergency response challenges *(17)*. As such, no survey results exist for WMA but their members' pandemic response policy developments are extensively cited.

- World Physiotherapy conducted a cross-sectional survey (in June 2020) that included questions on interruptions to service provision *(18)*. Questions probed member associations on the long-term impact of the lack of patient access to physiotherapy services, lack of physiotherapists (particularly in Africa) and provided insights into the stock and gender distribution of physiotherapists.

On average, each organization followed a 2–4 weeks data collection period approximately, albeit the specific dates for conducting the surveys varied from 2020 to 2021. Four organizations (ICN, FDI, FIP, World Physiotherapy) have reports that discuss either the pandemic specifically or in conjunction with additional priority issues in 2020. Three professions (ICN, FDI, World Physiotherapy) conducted COVID-19-specific surveys in 2020 and two (ICN, FDI) professions conducted follow-up surveys on COVID-19-specific surveys in either late 2020 or early 2021. As such, no unified data collection instrument (and questions) was applied across all WHPA organizations at a unique point in time; rather, the organizations gathered data and developed reports that discuss either the implications of the pandemic specifically or in conjunction with additional priority issues. It is important to note that WHO did not provide either technical or financial support to the WHPA data collection process. Table 3 presents a summary of the WHPA surveys in the period between January 2020 and November 2021. The surveyed members of each organization ranged between 52 and 146 (average 120) depending on each organization's membership count, i.e. whether the entire membership or a subset of the membership was surveyed. The survey response rate varied between 28%–90% (average 58%). The survey questions count among the four WHPA organizations (excluding WMA) ranged between 15–72 (average 35) and many questions had sub-questions that were not counted as additional questions.

Table 3: Summary overview of WHPA surveys and reports (2020–2021)

Index	Survey and/or report title	Year	Month	WHPA organization*	Members count (approx.)	Members surveyed (approx.)	Members surveyed and responding (approx.)	Response rate (%)	Countries, territories and areas represented (approx.)	Questions count
1	COVID-19 NDA Survey	2020	05	FDI	137	137	77	56%	75	15
2	COVID-19 NDA Survey, follow up	2020	12	FDI	133	113	38	34%	28	30
3	Global survey	2021	01	FDI	133	133	63	86%	54	20
4	Pharmacy Workforce Intelligence: Global Trends Report	2018**	01	FIP	146	146	45–67**	28–51%	75	72
5	Community pharmacy at a glance	2021	11	FIP	146	118	79	67%	79	72
6	Protecting nurses as a top priority	2020	08	ICN	130	52	34	63%	50	21
7	Nurses, A voice to lead	2020	12	ICN	130	130	54	42%	130	64
8	Policy Brief: Nursing education and the emerging nursing workforce	2020	12	ICN	130	130	64	49%	130	64
9	Impact of the COVID-19 pandemic on physiotherapy services globally	2020	06	World Physio	125	122	110	90%	122	60
10	Informal data collection on morbidity and mortality	2020–21	—	WMA	116	—	—	—	—	—
				Averages***	130	120	58	57–60%	83	38

*FDI: World Dental Federation; FIP: International Pharmaceutical Federation; ICN: International Council of Nurses; WMA: World Medical Association; World Physiotherapy (no acronym)
**Multi-year surveys (2006–2016), with 75 countries having contributed data for at least two time points
***All averages presented use a denominator of 9 (see index) except for the 'Members count' that is divided by 5 (number of organizations).

Counts of sample sizes in the results sections indicate approximations (sometimes with unknown specifics) because the detail was not readily available. For all but one organization, the surveys reviewed for this report were conducted and analysed by the second quarter of 2021 and used to inform multiple reports, policy briefs, press releases, amongst others in the same year (except for FIP that conducts multi-year surveys). At least three organizations (ICN, FDI and FIP) combined their analyses to discuss new findings and ongoing, exacerbated challenges in their relative profession.

Data quality assessment and analysis

This report is a synthesis of evidence generated by the WHPA organizations' surveys and reports during the COVID-19 pandemic. WHO worked closely with the WHPA organizations to review the data collected from the surveys and ensure that the themes of the presented results were in line with the conceptual framework. Data was jointly reviewed on a case-by-case basis and some national data reports which were deemed to be unreliable were excluded from the analysis. The presentation of results was also aligned with the standardized indicators identified under the conceptual framework to measure and report the multidimensional impact of COVID-19 on HCWs. Responses for key findings have been presented in terms of percentages. The overall count of responses and data source has been included for each finding in order to provide information about the reporting patterns as well as refer to the underlying WHPA surveys and reports for additional reading. For select survey findings across the five key themes identified in the report, the authors then corroborated the findings from the WHPA partner organizations' surveys of their respective national associations with relevant emerging evidence from literature on the four domains of the multidimensional framework developed by WHO to measure the impact of COVID-19 on HCWs.

The following results section presents key findings for all five research themes that were considered by at least two of the five organizations (for example, HCWs morbidity and mortality estimates were only collected by ICN and WMA), based on the prevalent perceptions of the national member associations of the WHPA organizations and data that were gathered through the various surveys and reports. Not all five research themes were addressed comprehensively within the WHPA surveys and reports. Even though questions posted to member associations and the response rates by member associations varied between organizations, it was still possible to synthesize general patterns of key findings from the survey results and reports. Additionally, the diversity of WHPA organizations made it possible for this study to identify a set of topics that apply to all organizations.

Results and key findings

As mentioned earlier, during the pandemic, HCWs have faced multiple hazards that affected their physical, mental and social well-being. This evidence synthesis presents a summary of key findings relative to five themes (described in the background section), in alignment with the conceptual framework developed by WHO to assess the multidimensional impact of COVID-19 on HCWs' health and social well-being, their working conditions and their availability and distribution (Figure 2).

Theme 1
Occupational and/or psychosocial factors affecting HCWs' morbidity and mortality levels: mainly related to infections, death, extreme stress (post-traumatic) and suicide, increased accidents at work, burnout and other mental health conditions

Many countries face great challenges in achieving a timely, accurate, coordinated and standardized data collection on morbidity and mortality due to COVID-19 at the national level. More challenging is to collect certified cause-of-death data by occupation, as well as data on infections and deaths by equity stratifiers such as gender, age, ethnicity, etc. Although ICN and WMA continue to make strong recommendations to their national members on the need for detailed data collection at the national level, their members are not practically positioned to do so, specifically as that would fall outside the scope of their mission and geographic reach (see Table 3). Some key findings, however, are presented below.

Infections

In 2020, the ICN survey results and reports revealed that more than 1.6 million HCWs have been infected in 34 countries[1]. Out of a subset of 52 surveyed associations that were acutely affected at that point in time, 34 (63%) reported that on average 10% of all confirmed cases of COVID-19 infections are among HCWs (ranging between 1–32%) *(9)*. Countries with adequate reporting mechanisms reported that nurses were the biggest HCW group with COVID-19 infections *(9)*. For example, nurses corresponded to 42% of the confirmed HCW infections in Mexico which represented the highest percentage of nurse infections among HCWs in the ICN dataset *(9)*. In the Islamic Republic of Iran, more than 60 000 nurses were diagnosed with COVID-19 *(20)*, which equated to 45% of the country's nursing workforce *(21,22)*.

In December 2020, ICN updated its reporting and reflected that on average around 10% of all confirmed COVID-19 infections were among HCWs, with a range of 0–15% *(9)* and further noted that more than 90 million people had been infected with COVID-19, resulting in 1.9 million deaths worldwide *(9)*.

Representing dentists, FDI reported on five countries' rates of infections *(23)*, noting that the data suggest that COVID-19 infection in dental practice may be less likely than in other healthcare settings, potentially due to several reasons, e.g. people experiencing COVID-19 symptoms are unlikely to visit the dentist *(24,25)* and measures are in place to reduce this risk in many countries, such as pre-treatment screening questionnaires *(26)*. Further, prior to the pandemic, oral health personnel already used a high-level of personal protective equipment (PPE) *(24)*.

Representing physiotherapists, World Physiotherapy reported that some member organizations have tracked biosafety, health and the working conditions of the health workers during the pandemic. As a result of working as part of the pandemic response, many physiotherapists have become infected with COVID-19, and some have developed long COVID *(18)*. World Physiotherapy responded to member organization reports of lack of sufficient access

[1] Argentina; Australia; Bangladesh; Brazil; Canada; Chile; China; Colombia; Congo; Cyprus; Czechia; Denmark; France; Germany; Greece; India; Iran (Islamic Republic of); Ireland; Italy; Malaysia; Mexico; Nigeria; Pakistan, Philippines; Portugal; Romania; Russian Federation; Senegal; South Africa; Spain; Thailand; Türkiye; United Kingdom of Great Britain and Northern Ireland; and the United States of America.

to PPE with an advocacy campaign "#PPE4PT" *(27)*. Representing physicians and pharmacists, WMA and FIP did not collect any information on infection rates.

Deaths

In the earlier months of the pandemic, ICN recorded 3 418 deaths among its member associations due to COVID-19. These occurred globally between January 2020 – April 2021 and represented 60 countries, territories and areas[2] with a range of 1–592 per country.

For WMA, an initial count of the number of physician deaths reported was 753. For a subset of these notified deaths that collected age data (n=181, 24%), the range was 34 to 90 years (mean, 63). The number of countries reporting at least one death was 16, and the range of physicians' deaths within a single country was between 1 and 175. WMA passed the *Resolution regarding the Medical Profession and COVID-19*, that cast attention on the loss of thousands of physicians' lives practising their profession and fulfilling their ethical duties and included many recommendations *(28)*.

FDI, World Physiotherapy, and FIP have not reported surveying their members for morbidity and mortality rates. This should not be taken as lack of recognition of the severe impact the pandemic is having on those professions, rather that all WHPA organizations reporting focused on how to continue to best serve their respective members, despite clear workforce challenges (as exemplified in the following sections).

For ICN, 48% (16 out of 33) of the national nursing associations (NNA) reported that in their countries, COVID-19 has been recognized as an occupational disease for HCWs *(9)* and 45% (14 out of 31) of those countries started to provide compensation to health staff who have contracted the disease at work. However, among those countries providing the right to compensation, the eligibility of claiming the compensation highly varied across countries *(9)*.

WMA urged governments to recognize SARS CoV-2 infection as an occupational disease and that the medical profession be declared a "profession at risk and further requested that taking care of healthcare professionals be a priority, especially in the field of mental health" *(28)*.

Stress, trauma, burnout and other mental health conditions

Mental health and psychosocial (MHPSS) factors resulting from the HCWs' occupational environment are a pervasive hazard and a long-standing issue for HCWs since before the COVID-19 pandemic. Several unknowns about the virus that existed in the initial phase of COVID-19 including its pathophysiology, mode of transmission, susceptibility and contagiousness, all contributed to community-wide distress and may have specifically contributed to increased stress in the workers caring for those with COVID-19. Supply chain weaknesses struggled to provide adequate PPE (and other infection prevention and control (IPC) products). Shifting public precautions resulted in shifting (somewhat inconsistently) practice directives that affected HCWs' ability to deliver care. ICN reported most pervasively on this topic, emphasizing that nurses continue to be placed in harm's way with an uncertain level of risk *(11)*, that an immense mental health impact of the pandemic was occurring on health personnel's lives, including its impact on their families and loved ones, all of which have the potential for long-term effects. Although only the nursing profession emphasized these issues, other reports in the professions were consistent with these claims. In the reports provided, the theme terms that were also explored for relationships among variables included 'redeployment', 'stress', 'burnout', 'anxiety/anxious', 'depress(ed/ion)', 'distress', 'sick(ness)', 'absent', and 'isolated'.

[2] Argentina; Australia; Austria; Bahamas; Bahrain; Bermuda; Bolivia (Plurinational State of); Brazil; Bulgaria; Canada; China; China, Macao SAR; Denmark; El Salvador; Estonia; France; Germany; Greece; Grenada; Guatemala; Haiti; Iceland; India; Italy; Jamaica; Japan; Lebanon; Liberia; Malaysia; Mauritius; Mexico; Myanmar; Nepal; New Zealand; Nicaragua; Norway; Oman; Panama; Paraguay; Philippines; Portugal; Republic of Korea; Romania; Russian Federation; Rwanda; Samoa; Senegal; Solomon Islands; Spain; Sri Lanka; Saint Lucia; Sweden; Switzerland; Thailand; Togo; Türkiye; United States of America; West Bank and Gaza Strip; and Zimbabwe.

ICN stated that "a global phenomenon of mass trauma is occurring to nurses since the start of the pandemic" *(19)*. This includes the ethical dilemmas that exacerbated caring for patients given their concern for their personal safety. For example, the American Nurses Association found that at least 69% (n=10 997) of nurses in the United States of America said they agree or strongly agree that they put their patients' health and safety before their own *(29)*. In Israel, over 40% (n=231) of nurses greatly agreed with the statement that they are "scared to care for sick and carrier patients" and that "caring for sick or carrier COVID-19 patients entails a significant emotional burden" *(30)*.

ICN emphasized that stress conditions for nurses included key risks of pathogen exposure, long working hours, psychological distress, fatigue, occupational burnout, stigma, and physical and physiological violence. ICN also flagged the potential long-term impact of long COVID on HCWs. Their survey findings showed close to 80% (n=48, approx.) of responding NNAs received reports of mental health distress from nurses working in the COVID-19 response (19). A subsequent survey in 2021 indicated that over 70% of NNAs had received reports of mental health distress from their nurses (n=65, approx.) *(11)*. Nurses also reported feeling isolated from their families and anxious about the risk of infecting their family members with COVID-19 *(19)*.

In 2020, ICN identified the increased risk of burnout, post-traumatic and other stress-related disorders among nurses and cited that

> ***A study in Wuhan, China of 2 014 nurses from two hospitals found that about half of the nurses reported moderate and high work-related burnout, indicated by high scores of emotional exhaustion (n=1 218, 61%) and depersonalization (n=853, 42%) as well as low scores of personal accomplishment (n=1 219, 61%). The findings showed that 288 (14%), 217 (11%), and 1 837 (91%) nurses reported moderate and high levels of anxiety, depression, and fear, respectively. Mental health outcomes were statistically positively correlated with skin lesions and negatively correlated with self-efficacy, social support, and work willingness*** *(31)*.

ICN also reported that 38% (n=20, approx.) of NNAs believed their health systems were not well prepared to support their nurses' emotional and psychological well-being *(11)*. Noting that less than 1% of health expenditure is spent on mental health services, and less than 1% of the global health workforce is working in mental health, ICN related the health of nurses, as part of the communities, directly affects the wealth of a nation *(11)*.

Specific examples at the national level include:

- A survey conducted in 13 countries in Africa revealed that 20% of respondent nurses (n=489) reported daily depression symptoms during the pandemic, compared to 2% prior to the pandemic *(32)*.
- In Spain, 80% of nurses report symptoms of anxiety and increasing burnout (n=1 243 respondents) *(33)*.
- In Australia, 60% of HCWs (n=9 518 respondents) reported anxiety, 71% reported burnout and 57% reported depression, with predictors for worse outcomes including female gender, younger age, nursing and allied health roles, among others *(34)*.

Inadequate protection for HCWs in all health settings has also led nurses to deal with professional and ethical questions related to duties of care while it is also ethically required that nurses promote their health and safety. These challenges continue to place nurses in a vulnerable position, requiring them to balance the competing obligations of: 1) their role in beneficence and duty to care for patients with rights and responsibilities; 2) inadequacies within their healthcare systems that are consistent with their rights and duties; and 3) the protection of themselves and their loved ones *(35)*. Ensuring the protection of nurses will result in their increased trust in the health system and their improved physical, mental and emotional health, thereby improving the quality of care to patients *(11)*.

Although WMA did not survey its physician members on the occupational impacts of COVID-19, preceding the pandemic, it passed numerous policies on their professional contexts, such as physician physical and mental health well-being *(36)* and their occupational and environmental safety *(37)*, in which physicians are recognized as an integral part of public health and primary health care (PHC). At the onset of the pandemic, WMA strongly recognized the occupational impact the SARS CoV-2 virus was having on HCWs in general, and physicians specifically, and passed the *Resolution regarding the Medical Profession and COVID-19 (28)*.

FDI and FIP representing dentists and pharmacists respectively did not survey their members specifically on MHPSS factors, however, FDI surveys early in the pandemic focused on other risk/protective factors for mental health such as access to adequate PPE, appropriate health emergency guidance, and financial impacts affecting access to oral health. Likewise, FIP focused on access to pharmacists, building confidence in vaccines and distribution of medicines through community pharmacies.

World Physiotherapy noted the value of providing a safe space for physiotherapists to share experiences of living with long COVID. Some members of these networks have highlighted the importance of being able to pace themselves and feel supported at all levels when returning to their workplaces *(38)*.

Theme 2

HCWs' temporary or permanent departures from service: mainly due to multiple factors (such as, unmanageable workload, long COVID, fears of excess morbidity and mortality given the unpredictable period of the outbreak or emergency situation, among others), and/ or other external factors (e.g. social and environmental)

A wide range of factors are associated with HCWs' temporary or permanent departures from service, and key to those quoted and observed is the workload burden due to the pandemic response. This was reported in several ways, such as reflections of an unsure/unsafe work environment, increased demands that had also diversified, and the need to train new segments of the HCWs to engage directly in vaccines roll-out.

ICN and World Physiotherapy reported the lack of representation of their professions at the national level particularly during the planning and response decision-making processes (for nurses) or in understanding their role in the response (physiotherapists). FDI surveyed their members on representation and opportunities to engage at the national or regional levels. In the reports provided, the theme terms that were also explored for relationships among variables included 'redeployment', 'repurpose', 'volunteer hours', 'overtime', 'unknown/unpredictable', 'risk', 'exposure/exposed', 'leave', 'fear', 'afraid', 'threat', 'absent', 'lack of appreciation', and 'training to administer vaccine'.

The unmanageable workload

Prior to the COVID-19 pandemic in 2020, ICN projected a global shortfall of more than 10 million nurses by 2030 *(39)*. They estimated that this number could be close to 14 million nurses in the future because of the 'COVID-19 effect' that both exacerbates and expedites the point of burnout and absenteeism or leaving the profession entirely *(19)*. Notwithstanding that, nurses account for around 60% of the health professional workforce around the world *(19)*.

ICN found that 90% of NNAs (n=58, approx.) are somewhat or extremely concerned that heavy workloads, insufficient resourcing, burnout and stress levels related to the pandemic response are the drivers affecting the counts of nurses who have left the profession *(40)* and that will continue to contribute to an increase in the number of nurses leaving the profession in the future. Words used to describe the symptoms were: exhaustion, burnout, overwhelmed, difficulty sleeping, anxiety, depression, fear (of infection from carrier patients) *(19)*. Specific examples at the national level include *(19)*:

- The Japanese Nursing Association reported that 15% (n=2 750) respondent hospitals across Japan had nurses resigning from their

jobs, and some 20% (n=38 000) respondent nurses reported that they had experienced discrimination or prejudice amid the spread of the first wave of the pandemic *(41)*.

- The American Nurses Association reported that 51% of the surveyed nurses (n=10 997) have experienced the feeling of being 'overwhelmed' *(29)*. Other reports from the United States showed that 93% of HCWs were experiencing stress, 76% reported exhaustion and burnout, and that nurse-to-patient ratios increased three-fold (n=1 119) *(42)*.

- In China, 60% of nurses reported exhaustion and 90% reported anxiety (n=2 014 respondents) *(31)*.

- A study conducted in Israel indicated that over 40% of nurses fear caring for the sick and COVID-19 patients (n=231 respondents) *(30)*.

ICN survey results and reports also show that the intention to leave the profession, either during or after the pandemic, was high *(40)*. For example, the Danish Nurses' Organization in 2020 found that 9 out of 10 nurses (n=1 820) considered looking for a new job *(11)*. Of all NNAs surveyed in December 2020, 19% (n=10, approx.) reported an increase in the number of nurses leaving the profession as a result of the pandemic and cited that the main reasons for doing so included heavy workloads and insufficient resourcing and, secondly, burnout and stress *(11)*. The impact of this trend was particularly pronounced in Lebanon, for example, where the Order of Nurses in Lebanon reported that the situation had become critical because their economy was in crisis as a result of the pandemic, resulting in a major downsizing in the number of hospitals and reduced numbers of HCWs as well as nursing pay *(11)*.

More than half of the NNAs (57%) (n=30, approx.) surveyed reported that those remaining in the profession are being asked to undertake activities outside their normal duties: i) to ensure the quality of care provided to the population (Portugal); ii) to get what needs to be done, done (Estonia); and (iii) to expand their own scope of practice for a specific period (Denmark) *(11)*.

Other examples of additional activities include HCWs being deployed to COVID-19 isolation or treatment centres (Rwanda) and anaesthetists that typically work in surgical theatres being relocated to intensive care units due to the reduction of elective surgeries (France) *(43)*. For some, nurses of national relevance[3] were allowed to take on activities during the pandemic which usually are reserved for physicians, but only in cases where no physician is available and which became part of the pandemic legislation (Germany) *(11)*. Accelerating movement to allow more registered nurses to prescribe medications for the treatment of opioid addiction also occurred, i.e. in particular, a programme to support people in rural and remote areas access the treatments they need (Canada) *(44)*.

On the positive side, ICN reports show that 56% (36 out of 64) of NNAs reported that there have been positive changes to nursing's scope of practice *(11)*: that in 41% (26 out of 64) of NNAs, there has been an increased interest by health systems to develop training programmes for advanced practice nurses (APNs); and that at least one NNA was in the process of updating their nursing regulations as part of its review, and that APNs would be included (Bahamas) *(11)*.

Administering vaccines was also an additional duty that HCWs were requested to perform, depending upon the country context and regulations. Representing dentists, FDI's survey revealed that of the 57 survey responses, the countries that granted authorization to the profession to administer COVID-19 vaccines include: Cambodia, Colombia, Egypt, India, Indonesia, Lebanon, Nigeria, Serbia, Slovenia, and the United Kingdom of Great Britain and Northern Ireland (17%) and that in some of these countries, dentists have not previously been allowed to administer vaccines, including the influenza vaccine

[3] It refers to nurses that have been recognised as Advanced Practice Nurses in Germany.

(45). In that respect, movements to increase dentists' involvement in vaccination campaigns are also taking place in other countries. For example, in France the National Order of Dental Surgeons has called on the government to grant permission to the profession, but no authorization has been given to date *(45)*. Further reporting includes that the Ministry of Solidarity and Health contacted the *Haute Autorité de Santé* to issue an opinion on a draft health emergency decree authorizing new categories of HCWs to participate in the vaccination campaign (either by empowering them [to vaccinate] against COVID-19 or by empowering them to prescribe [and vaccinate]). This group of new categories was expanded to include dentists, students of select medical specialities and volunteers, retired professionals (dentists, doctors, midwives, nurses, pharmacists, veterinarians), electroradiology technicians and laboratory technicians *(46)*. FDI further reported that similar discussions were also ongoing in Australia, Hong Kong SAR of China, Germany, Ireland, Kenya, Spain, and Sweden *(13)* while eleven other countries – Cambodia, Colombia, Egypt, India, Indonesia, Lebanon, Nigeria, Serbia, Slovenia, United Kingdom and the United States – reported granting authorization to administer vaccines to certain professionals such as dentists who had not previously been allowed to administer vaccines or participate in the influenza vaccination campaigns *(13)*.

Representing pharmacists, FIP also reported that the 2020–2021 French vaccination campaign was extended until February 2021 and pharmacists could vaccinate the general public as well (beyond only COVID-19). At the time of the report, it was yet to be determined what impact increased pharmacist-led immunizations have played during the 2020–2021 influenza season *(47)*. To increase support for pharmacist-administered vaccines, the French Pharmacies' Health and Social Education Committee, Cespharm, also released several resources, including a poster to be displayed at pharmacies offering flu vaccination, a brochure containing information about influenza for healthcare professionals, a checklist to identify at-need patients and a template registry sheet for vaccinations by community pharmacies *(47)*.

In many public health systems, World Physiotherapy representing physiotherapists, found that professionals in their fields were redeployed into other healthcare roles to support emergency plans to admit inpatients with COVID-19 *(18)*.

Fears of excess morbidity and mortality

In the earlier months of the pandemic, the lack of PPE and other necessary supplies, and the continuing disproportionate access was evident to all WHPA organizations. The majority of NNAs reported shortages of PPE in the earlier stage of the pandemic and while this situation improved over time, many shortages remain. In August 2020, ICN conducted the first COVID-19 related survey on its NNAs (52 associations in 50 countries), a period of high COVID-19 caseloads. Thirty-three complete responses from 32 countries were received with a response rate of 63.4%. One response was received from each of the 33 NNAs, including 11 in the Region of the Americas (2 NNAs in Mexico), 9 in the European Region, 4 in the Western Pacific Region, 4 in the African Region, 4 in the South-East Asian region and 1 in the Eastern Mediterranean Region. The survey results show that about a third (11 out of 33) of the NNAs reported moderate to severe shortages of PPE in primary and community settings while 45% (15 out of 33) of the NNAs indicated moderate to severe shortages of PPE in the long-term care facilities in their countries *(9)*. In a number of instances, nurses were forced to either buy or make their own PPE *(11)*. Furthermore, up to 22% (12 of 54) NNAs reported PPE supplies were either rarely adequate or never adequate in some healthcare settings *(11)*.

All NNAs reported that nurses had received formal IPC training or refresher course on PPE use for airborne transmission. However, over half (18 out of 33) indicated that the training was provided more than six months before the start of the pandemic *(9)*. From a planning perspective, 30% (16 of 54) of NNAs reported that they had concerns about their country's approach to IPC. Startling reports from the survey also indicated that other basic yet essential IPC measures and materials were not

adequately provided to HCWs. This included access to clean water, soap or hand sanitiser *(11)*. These challenges of increased working hours and lack of adequate PPE and its associated training resulted in nurses experiencing mental distress *(19)*.

FDI also reported PPE shortages for dentists for 79% (approximately 59 of 75) of its member associations *(12)* and put forth well-designed questions to gain insight into this issue (Annex 1). World Physiotherapy likewise reported that the inadequate access to PPE by the physiotherapists in the initial period of the pandemic was significant. For the 110 associations, when categorized by their regions (that are different from the WHO regions), the lack of PPE reportedly ranged from 42% in Asia Western Pacific to 86% in Africa. An African member organization stated that

> ***"Physiotherapist outpatients stopped attending their physical therapy visits due to fear of infection. The physiotherapist lacked PPE capacity to maintain their practice. Home-based physiotherapy services were severely limited due to patient requests for discontinuation. Telehealth was attempted but physiotherapy and patients lack platforms for delivery."*** *(18)*

World Physiotherapy's membership network reported that requests to the government to ensure access to PPE for physiotherapists had been made and that in some countries, member organizations donated PPE supplies to their members to assist physiotherapists to practice safely *(18)*.

In its *Resolution regarding the Medical Profession and COVID-19*, WMA advocated for sufficient provision of equipment and PPE for HCWs, which allows [safe access to] healthcare and guarantees the availability of this material in a situation of possible outbreaks *(28)*. Furthermore, early in the pandemic, WMA supported countries worst affected by the COVID-19 crisis by recognizing the huge challenges doctors and other HCWs are facing in maintaining health systems in such difficult and demanding conditions. WMA called upon the international community and governments to urgently prioritize support and aid to the worst affected nations, including oxygen, drugs, vaccines, PPE and other equipment as needed, and to strengthen healthcare system resilience in the face of future pandemics *(48)*.

Lack of representation in the policy and planning of the COVID-19 response

Evidence collated by ICN and World Physiotherapy suggests that the lack of representation at the policy and planning level has adversely affected their circumstances in the pandemic response. The evidence demonstrated that public health nurses (PHNs) are reliable and effective responders during infectious disease emergencies, providing safe, effective and non-discriminatory care to the communities they serve. They have been rapidly deploying for 'mobile-strike' teams, investigating case contacts, delivering health education, including self-isolation and quarantine, monitoring health and well-being, and responding as necessary. Monitoring and response have been conducted through both telemedicine and home visits. These highly skilled PHNs have carried a huge weight of responsibility, particularly in relation to health education given the rapidly shifting guidance on COVID-19 *(49)*. ICN states the key role that PHNs can have in leadership during the current public health crisis. Despite their critical role, however, in many countries PHN positions have been underfunded, often eliminated or under-resourced. This has resulted in a diminished public health mandate and reduced access to institutional experience to provide public health services, resulting in making communities more vulnerable to both chronic and infectious disease threats *(49)*.

Lacking appreciation and feeling undervalued for their roles during the pandemic was acknowledged by several WHPA organizations. For example, ICN reported that nurses from around the world feel undervalued and that their true potential is not understood nor appreciated (further expanded upon in theme five). Usually, this is evidenced by under-resourcing, lack of representation at high-level decision-making and artificial barriers created to stop nurses from working to their full scope of practice or potential *(9)*.

World Physiotherapy reported a lack of knowledge about the importance of physiotherapy treatment and the role of physiotherapists as HCWs in the response to the COVID-19 pandemic. They felt this was occurring not only among people affected by COVID-19 but also from different stakeholders involved in the healthcare process *(18)*.

In the case of oral care, FDI asked their membership about involvement in areas such as advocacy at the national and/or regional level, contribution to national data on oral health indicators and representation and convening of oral health personnel *(14)*.

Theme 3
HCWs' access to and uptake of COVID-19 vaccinations: mainly knowledge around vaccination coverage among HCWs; and the main enablers and barriers to rapidly achieving high coverage of COVID-19 immunization of HCWs

The topic of vaccination coverage among HCWs (those fully vaccinated, partially vaccinated and those with no access to vaccination) was not surveyed specifically by any of the WHPA organizations because, like morbidity and mortality estimations, global member organizations do not have access to this information. However, surveys covered key topics concerning HCW being considered as a priority group for receiving the vaccine, addressing both enablers/barriers to vaccination coverage (for the public), and advocacy campaigns for confronting mis- and dis-information. Spectrums of both trust and distrust among vaccine-hesitant patients and of mis- and dis-information affecting the public's safety concerns were also discussed.

All WHPA organizations reported on this theme differently with FIP, representing pharmacists, providing the most strategy-related vaccination-insights for addressing challenges related to vaccine reluctance. In the reports provided, the theme terms that were explored for relationships among variables also included 'lack of/ unclear information', 'mis-' and 'dis-information', 'strategy' and 'policy'.

HCWs and COVID-19 vaccination

ICN published a Call to Action that states that "nurses are the largest group of health professionals in the battle against COVID-19: their safety and well-being should be a priority for governments and healthcare organizations" *(50)*, that they are essential to keep our health systems and emergency response running, and that governments should commit to prioritizing COVID-19 vaccination for HCWs once available *(9)*. For dentists, FDI found that 53% of responding countries (n=57) stated that dentists would be included in priority vaccination groups, 18% reported that priority groups were still being planned, and 12% reported that they would not be *(45)*. The remaining 17% represents the countries that either have not granted authorization to the profession to administer COVID-19 vaccines or dentists would not be included in the priority vaccination groups. Significantly, among those responding are countries where dentists have not previously been allowed to administer vaccines, or at least the influenza vaccine. In the United States, around 20 states are currently permitting dentists to administer COVID-19 vaccines *(45)*.

In its *Resolution on the Equitable Global Distribution of COVID-19 Vaccines*, WMA called attention to the heightened risk faced by HCWs and vulnerable populations in a pandemic situation and therefore urges that these individuals be among the first to receive a safe and effective vaccine *(51)*.

ICN found that an enabler for vaccine coverage was to utilise the presence of nurses through public information channels that strengthen their community integrity and value, including disseminating vaccine recommendations that "create a better understanding of health and healthcare through the nursing voice" *(9)*. Guidelines and recommendations for HCWs testing for COVID-19 are available in 80% (24 of 30) of the NNAs. In most countries, however, routine testing of the health workforce is not implemented *(9)*.

FDI and FIP also noted the relevance in community education for their respective professions of oral and pharmacy care.

Pertaining to the medical practice, the WMA Resolution on this topic states that "vaccination and immunization have been acknowledged as an effective and safe preventive strategy for several communicable diseases. And vaccine development and administration have been the most significant intervention to eradicate infectious diseases and influence global health in modern times" *(51)*. Examples of the elements for countries to implement include:

> ***"Element No. 2) emphasizes that no country should be left behind in the race to vaccinate its population against this global threat;***
>
> ***Element No. 3) balance the desire of each country to protect its citizens and the need for the vaccines to be distributed worldwide;***
>
> ***Element No. 9) coordinated efforts to increase public trust in vaccination in the face of disinformation campaigns and anti-vaccine movements which undermine the health of both children and adults."*** *(51)*

FIP extensively covers vaccination and provides multiple strategies, recommendations and examples in its toolkit *(52)* that aims to support individual pharmacists with tools for effectively communicating the value, efficacy and safety of vaccines, and for addressing concerns about or the rejection of vaccines. It provides a background on vaccine hesitancy and the main reasons for it as well as ways to address vaccine hesitancy directly with individuals. It also includes examples of pharmacy-based campaigns and information, and guidance on advice for different types of vaccines is also provided. FIP identified many barriers for the pharmacy profession rapidly achieving high vaccination coverage via mass campaigns. They stated that the success of vaccination campaigns, and hence the capacity to respond and control a pandemic, will largely depend on the ability to vaccinate a large part of the population. They also reiterated the need to address and overcome what the WHO calls the 3 C's of vaccine hesitancy (complacency, confidence and convenience) *(53)*. These include building trust in:

- vaccines' effectiveness and safety;
- systems that deliver them, including the reliability and competence of the health services and HCWs; and
- motivations of the policy-makers who decide on the needed vaccines.

FIP did not conduct data collection specific to COVID-19 vaccination refusal among HCWs but referenced the WHO concerns related to vaccination or outright refusal to receive vaccines despite availability, as one of the top 10 threats to global health in 2019 *(54)*.

Theme 4
Common causes and key manifestations of industrial actions, protests, strikes and lockouts (IAPSLs): mainly related to the general welfare of HCWs (fair pay, workload, safety, security)

Causes and key manifestation of industrial actions, e.g. activities specifically leading to protests, strikes and lockouts, were not extensively reported. However, concerns and unrest were expressed on workload burden and associated safety issues, inequities of treatment, and violence. The World Physiotherapy collected gender-related data on their respondents. ICN stated that 90% of the nursing workforce is female and gender inequality has been further exposed by the pandemic, including issues of protection, fair pay, and decent work conditions.

In the reports provided, the theme terms that were explored for relationships among variables also included 'salary', 'overtime', 'double-time', 'overworked', 'lack of appreciation', 'violent/violence', and 'value/valued'.

HCWs and causes of IAPSLs

ICN reported the key risks of pathogen exposure, long working hours, psychological distress, fatigue, occupational burnout, stigma, pay, and physical and psychological violence as conditions of discontent and unrest among nurses *(11)*. For example, more than 20% (n=13) of NNAs expressed significant concerns and unrest related to the pay of nurses in their countries *(10)*. The additional occupational risks and the mounting demand and pressure in work have led to a wide debate of wage levels and remuneration in some countries, e.g. nurses went on strike over the working conditions and wages during the COVID-19 pandemic (Zimbabwe) *(9)*. ICN cited an independent analysis that identified industrial disputes and strike action in 84 countries among health workers since February 2020 *(55)*.

Other safety-specific concerns were reported by World Physiotherapy. They stated that lockdown restrictions (and returning from those restrictions) and the definition of 'essential physiotherapists' was not consistent within and between countries, territories and areas. They also recommended the development of guidance documents for HCW clarity *(18)*.

HCWs and issues of violence and discrimination

ICN reported that around 70% (24 of 34) of the surveyed NNAs experienced incidents of violence or discrimination against health workers due to COVID-19 *(9)*. In 2021, 49% (26 of 54) NNAs again reported pandemic related incidents of violence, assaults, or discrimination against nurses *(11)*.

For example, in collective country-specific references *(11)*, the Japanese Nursing Association reported that:

> ***"There are some reports of discrimination, for example, taxi drivers refused to allow HCWs rides, childcare services refused to take care of children of HCWs, and neighbours of home care users are throwing heartless words that the home visit nurses are spreading the infection."***

The Indian Nursing Council reported that:

> ***"Tenants asking the nurses to vacate the houses, during quarantine, discriminating in the allotment of accommodation, for example the doctors are provided five-star hotels whereas nurses are given accommodation in the hostels."***

The Mexican Federation of Nursing Colleges, A.C. reported that:

> ***"They have been prevented from using public transport, they have been sprayed with chlorine, their property (houses, cars) has been torched, they have suffered social isolation, and they have been asked not to remain in their own homes. These and other incidents have been reported to the corresponding legal authorities."***

WMA has been advocating and developing policy for the protection of medical professionals specifically, and HCWs in general, in the past two decades. These include the *Statement on Violence and Health* (2003) *(56)*, *Statement on the Protection and Integrity of Medical Personnel in Armed Conflicts and Other Situations of Violence* (2011) *(57)*, the *Statement on Violence in the Health Sector by Patients and Those Close to Them* (2012) *(58)*, and the *Declaration on the Protection of Health Care Workers in Situation of Violence* (2014) *(59)*. Country-specific policies have also been developed for conflict-affected countries, e.g. the *Resolution to Stop Attacks Against Healthcare Workers and Facilities In Turkey* (2015) *(60)* and the *Resolution on the Protection of Health Care Facilities and Personnel in Syria* (2016) *(61)*.

In the past two years, WMA also passed specific policies that address the continuation or exacerbation of the violence during the pandemic period, such as the *Resolution regarding the Medical Profession and COVID-19* to "fight against violence towards doctors and against any sign of their stigmatisation by promoting zero tolerance of violence in healthcare settings" *(28)* and country-specific contexts, such as the *Resolution in support of Medical Personnel and Citizens of Myanmar (62)*.

Inequalities and inequities affecting HCWs' social and well-being status

For ICN, the pandemic has increased inequalities and made nurses realize that optimal levels of health cannot be achieved without addressing other social and well-being factors such as housing, education, employment, living standards, climate and nutrition. They reiterated that working to eliminate inequalities related to gender, race, ethnicity, religion and socio-economic position will lead to better societies in general, and to reducing conflict and violence, so that everyone will be able to live more peaceful and fulfilling lives. Addressing gender inequalities in healthcare, such as biases in data gaps and access to care is a vital part of the vision for future healthcare, and one of the most effective ways to improve the health of society *(11)*.

The FIP COVID-19 reporting included data from 2018 that linked workforce intelligence (as one of its many global priorities) to goals that address gender and diversity balances. It conducted a longitudinal study from 2006–2016 (and completed before the COVID-19 pandemic) of its workforce balance on global capacity trends in the pharmaceutical workforce that included gender distribution and capacity ground mapped to regional variation and country-level economic indicators *(15)*. Forty-one (out of 75 countries, 54%) provided data on gender in the years of 2009, 2012, 2016.[4] Using properties of regression analysis, FIP estimated an overall global increase of 16% female participation in the global pharmaceutical workforce by 2030, resulting in an estimated proportion of 72% for the total global pharmaceutical workforce *(15)*.

The FIP report provides a comprehensive overview of capacity trends, noting its significant contributions to the understanding of the current, and persistent, workforce capacity inequities *(15)*. FIP states that without adequate capacity there cannot be safe and effective use of medicines globally, regionally, nationally, or locally. Pharmacists will continue to have a crucial role in vaccination campaigns, both related to COVID-19 and other immunizations.

World Physiotherapy collected gender-specific data but did not survey male and female physiotherapists specifically *(18)*. Nonetheless, having the reporting data by gender could yield some useful insights into potential inequalities and inequities among physiotherapists. The remaining WHPA organizations, as a part of this examination, did not assess gender specifically and how it relates to inequities in the workplace.

Theme 5
Detrimental consequences of any of themes 1-4 above, mainly evidence related to the delivery and quality of health services i.e., prolonged service disruptions, interruptions in HCW education

Service disruptions were reported by the dentists, nurses and physiotherapists but the pharmacists and physicians did not survey this topic specifically. Detrimental causes of the disruptions specific to the HCWs were not extensively discussed, although WMA has multiple policies addressing how emergencies and disasters affect physicians, the populations they serve and recommends medical ethics be part of the emergency planning to protect people, especially the most vulnerable (referenced below). Data and findings specific to service disruption and its impacts on mortality and morbidity of in-patient care was not discussed, but implications of these service disruptions were.

ICN, FDI, WMA and FIP (i.e. nursing, dental, medicine, and pharmacy) refer to service disruptions to the 'patient' except for World Physiotherapy that also uses the term 'client' when delivering its services. In the reports provided, the theme terms that were also explored for relationships among variables included 'client', 'untreated', 'missed services/appointments', 'lack of staff/services', 'suspended/reduced/increased' of 'impacts/access to care', and 'morbidity/mortality'.

[4] Forty-one (out of 75 countries) included in this analysis provided data on gender. The initial starting date for the data trend analysis was 2009 because no gender-related data were captured from the 2006 survey, resulting in a reduction to three discrete time data points (2009, 2012, 2016).

HCWs and disruptions to essential health services

Since the beginning of the pandemic, ICN has been tracking its impact on health worker infections and nurse deaths and calling for the protection of the health workforce *(19)*. Both WMA and ICN reported counts of mortality and morbidity due to COVID-19 early in the pandemic and at a specific point in time, but the true toll remains unknown and significantly understates the true impact. ICN referenced the Centers for Disease Control and Prevention's (CDC) position that, due to the pandemic, suspensions of public health programmes, including the monitoring of tobacco use, maternal health services, domestic violence (including child abuse and neglect), mental health and substance use disorders services would have a compounding societal impact. For example, female HCWs, were more prone to poor mental health outcomes and difficulties when facing stressful situations *(63)*. This evidence synthesis also considered the results of the three rounds of the WHO pulse survey that assessed how the pandemic's impact has evolved over time regarding disruptions and rebounds in services and responses, mitigation strategies and bottlenecks to the implementation of essential COVID-19 tools. In particular, the third pulse survey (responses received during November–December 2021) continued to report health workforce mitigation measures are among the top strategies used to mitigate disruptions with more than 70% of countries (at least 67 of 95) applying some of these measures *(64)*.

The third pulse survey results also underscored the particular concern over the variant waves of Delta and Omicron (92% of 129 countries) *(64)*. ICN reiterated its extreme concern about the increased transmissibility of the new variants of SAR-CoV-2 and the impact of the viral changes on infection and hospitalization rates in healthcare workers *(19)*. They called upon governments to take urgent action to ensure the physical and mental health of nurses and other health workers, to build health systems that can deliver the essential public health functions for UHC and global health security, and provide support for the health workforce and to develop policy responses to address the global nursing shortage *(19)*.

Pertaining to the pandemic's impact on nurses and healthcare delivery, ICN emphasized that

> ***"The changes to healthcare delivery due to COVID-19 cannot be understated. The combination of lockdowns, quarantining, misinformation, high bed occupancy rates in hospitals and a culture of fear have resulted in a dramatic transformation in the public's response to seek care when needed. In addition to this demand issue, many healthcare services were scaled back, and staff and resources prioritized elsewhere. Care for chronic health conditions has been disrupted with early discharges from hospital to home, rescheduling of non-urgent elective procedures out/patient appointments and redeployment of staff" (11).***

FDI found that dental practices were closed/restricted during the early period of the pandemic for 50% (38 of 77) countries following a governmental decree, for 39% (30 of 77) following non-binding recommendations, and not restricted for 11% (9 of 77) *(12)*. From December 2019–June 2020, they further reported that 90% (69 of 77) countries had practice closures and restrictions with 77% (59 of 77) reporting PPE shortages *(12)*. From June 2020–February 2021, 39% (15 of 38) countries reported practices closures and restrictions and in 2021, 41% (26 of 63) still reported PPE shortages *(12)*.

Of the World Physiotherapy respondents to their annual membership census, 87% (96 of 110 members) reported that physiotherapy practice had been disrupted during the pandemic in their country/territory, with most member organizations reporting a disruption of two or three months, mainly between March and May 2020 (during the first wave of the pandemic) *(18)*. They further reported that 70% (77 of 110) of respondents reported all physiotherapy services had been disrupted during the pandemic. Private practice was the most impacted (87%, 96 of 110), followed by public health services (81%, 89 of 110), nursing homes (77%, 85 of 110), and community services (72%, 79 of 110). The Africa region had the lowest levels of disruption across almost all physiotherapy services and World Physiotherapy noted that more detailed research needs to be done to identify whether this is due to a lack of disruption

to services or to a more general lack of physiotherapists providing services in the region *(18)*.

One country representative in the South America region, of which all World Physiotherapy regional members participated (n=11), reported that

> ***"Outpatient and private care services were suspended, and many physiotherapists lost their jobs during the first three months of the pandemic in our country. Later, when care was allowed, the number of patients decreased due to protocols and fear. Although digital physiotherapy was implemented, it is still not a usual practice in our country, there are several rural places where there is no internet and physiotherapists do not know how much to charge per session"*** *(18)*.

World Physiotherapy has precise counts for their physiotherapists within each region and their South American member representation was 432 525 physiotherapists (40% of the global total of 1 091 585) at the time of the survey collection.

World Physiotherapy also noted that people with long-term conditions could be particularly affected by the disruption to physiotherapy services and therefore remedial strategies should be put in place to address this issue *(18)*. Further, that people with non-COVID-19 long-term conditions have been particularly affected by the disruption to physiotherapy services because they are more likely to develop complications secondary to their existing conditions *(18)*.

WMA has several long-standing policies that relate to the issues of interruptions to services and critical infrastructures due to disasters. In its *Declaration of Montevideo on Disaster Preparedness and Medical Response* (2011), WMA noted that each year disasters cause hundreds of deaths and cost billions of dollars due to disruption of commerce and destruction of homes and critical infrastructure, and that

> ***"The emergence of infectious diseases, such as H1N1 influenza A and severe acute respiratory syndrome (SARS), and the recent arrival of West Nile virus and monkey pox in the Western hemisphere, reinforces the need for constant vigilance and planning to prepare for and respond to new and unexpected public health emergencies and called upon its members to advocate to***
>
> ***…work with national and local governments to establish or update regional databases and geographic mapping of information on health system assets, capacities, capabilities, and logistics to assist medical response efforts, domestically and worldwide, when needed. This could include information on local response organizations, the condition of local hospitals and health system infrastructures, endemic and emerging diseases, and other important public health and clinical information to assist medical response in the event of a disaster."*** *(65)*

In its *Statement on Medical Ethics in the Event of Disasters* (2017), WMA reminded its members that

> ***"Disasters often result in substantial material damage, considerable displacement of people, many victims and significant social disruptions. Adequate preparation would make major consequences less likely and less severe and protect people especially the most vulnerable."*** *(66)*

And in its *Statement on Avian and Pandemic Influenza* (2018), WMA recommended that

> ***"Physicians should develop contingency plans to deal with possible disruptions in essential services and personnel shortages."*** *(67)*

Interruptions in HCW education

Interruptions related to HCW education are a powerful finding of this evidence synthesis. ICN had extensive reporting on the impact the pandemic has had on nursing students and their education. Disruptions of undergraduate and postgraduate nursing education was reported in 68% and 56% of countries (n=64) respectively. Schools were closed, clinical placements were cancelled

or postponed, and some countries are experiencing delays of up to a year *(11)*. ICN complemented this with United Nations Educational, Scientific and Cultural Organization (UNESCO) reporting that disruptions at all levels will impact nursing education. "At the peak of the COVID-19 crisis, 1.6 billion learners in 190 countries were impacted by national school closures worldwide" and further that "the United Nations reports that both the global economic impact of the pandemic combined with the effects of school closures could result in a generational education catastrophe" *(68)*. This topic is extremely relevant when considering the multiple and compounding impacts for the nursing profession specifically that face long-term profession shortages.

In summary, Table 4 provides an overview of the key findings relative to each of the five themes.

Table 4: A selective summary of the evidence of the multidimensional impact of COVID-19 on HCWs under the five themes

Theme	Key findings
1. Occupational and/or psychosocial factors affecting HCWs' morbidity and mortality levels: mainly related to infections, death, extreme stress (post-traumatic) and suicide, increased accidents at work, burnout and other mental health conditions	• The ICN survey (2020) results and reports revealed that more than 1.6 million HCWs have been infected in 34 countries. • As a result of working as part of the pandemic response, many physiotherapists have become infected with COVID-19, and some have developed long COVID *(18)*. • ICN created an estimate of 3 418 recorded nurse deaths among its member associations due to COVID-19 that globally occurred between January 2020–April 2021 in 60 countries. • Both ICN and WMA reported that in close to half of their members countries, COVID-19 has been recognized as an occupational disease for HCWs *(9,28)*. • ICN emphasized that stress conditions for nurses included key risks of pathogen exposure, long working hours, psychological distress, fatigue, occupational burnout, stigma, and physical and psychological violence *(11)*. • World Physiotherapy noted the value of providing a safe space for physiotherapists to share experiences of living with long COVID *(38)*.
2. HCWs' temporary or permanent departures from service: mainly due to multiple factors (such as, unmanageable workload, long COVID, fears of excess morbidity and mortality given the unpredictable period of the outbreak or emergency situation, among others), and/or other external factors (e.g. social and environmental)	• ICN found that 90% of NNAs are concerned that the heavy workloads, insufficient resourcing, burnout and stress levels related to the pandemic response are the drivers affecting the counts of nurses who have left the profession and that will continue to contribute to an increase in the number of nurses leaving the profession in the future *(40)*. • A number of additional duties were requested from HCWs, depending on the country context and regulations. These include administering COVID-19 vaccines in the case of dentists, working in intensive care units in the case of anaesthesiologists, and other HCWs being deployed to COVID-19 isolation or treatment centres *(13,43)*. • In some countries, physiotherapists were redeployed into other healthcare roles to support emergency plans and to admit inpatients with COVID-19 *(18)*. • All WHPA organizations variably echoed concerns over the inadequate availability of PPE and other basic yet essential IPC measures and materials (such as clean water, soap or hand sanitisers), sometimes used with insufficient training. These challenges and the increased working hours resulted in HCWs (especially nurses) experiencing mental distress *(9,11,12,18,19,28)*.

Theme	Key findings
3. HCWs' access to and uptake of COVID-19 vaccinations: mainly knowledge around vaccination coverage among HCWs; and the main enablers and barriers to rapidly achieving high coverage of COVID-19 immunization of HCWs	• None of the WHPA organizations had access to information around the COVID-19 vaccination coverage among HCWs. • FDI found that 53% of responding countries stated that dentists would be included in priority vaccination groups *(45)*. • ICN found that an enabler for vaccine coverage was to utilise the presence of nurses through public information channels that "create a better understanding of health and healthcare through the nursing voice" *(9)*. • FIP did not note data collection specific to COVID-19 vaccination refusal among HCWs but referenced the WHO concerns related to vaccination or outright refusal to receive vaccines despite availability, as one of the top 10 threats to global health *(53,54)*.
4. Common causes and key manifestations of industrial actions, protests, strikes and lockouts (IAPSLs): mainly related to the general welfare of HCWs (fair pay, workload, safety, security)	• Causes and key manifestation of industrial actions, e.g. activities specifically leading to protests, strikes and lockouts, were not extensively reported. However more than 20% of ICN's NNAs expressed significant concerns and unrest related to the pay of nurses in their countries *(10)*. • ICN cited an independent analysis that identified industrial disputes and strike action in 84 countries among health workers between May and October 2020 *(55)*. • World Physiotherapy stated that lockdown restrictions (and returning from those restrictions) and the definition of 'essential HCWs' was not consistent within and between countries/territories *(18)*. • In 2020, ICN reported that around 70% of the NNAs experienced incidents of violence or discrimination against health workers due to COVID-19. In 2021, 49% of NNAs again reported pandemic related incidents of violence, assaults, or discrimination against nurses *(9,11)*. • In 2020–2021, WMA passed specific policies that address the continuation or exacerbation of the violence during the pandemic period, such as the *Resolution regarding the Medical Profession and COVID-19* to "fight against violence towards doctors and against any sign of their stigmatisation by promoting zero tolerance of violence in healthcare settings" *(28)*. • The FIP COVID-19 reporting included data that linked workforce intelligence to goals that address gender and diversity balances. Using properties of regression analysis, FIP estimated an overall global increase of 16% female participation in the global pharmaceutical workforce by 2030, resulting in an estimated proportion of 72% for the total global pharmaceutical workforce *(15)*.
5. Detrimental consequences of any of themes 1-4 above, mainly evidence related to the delivery and quality of health services i.e., prolonged service disruptions, interruptions in HCW education	• FDI reported that 90% (69 of 77) countries had practice closures and restrictions from December 2019–June 2020, with 77% (59 of 77) reporting PPE shortages *(12)*. • Disruptions to physiotherapy practice during the pandemic were reported by 87% of World Physiotherapy respondents to their annual membership census (96 of 110 members) *(18)*. • Disruptions of undergraduate and postgraduate nursing education was reported in 68% and 56% of countries (n=64) respectively *(11)*.

Discussion

The needs and challenges associated with collecting coordinated evidence-based data at the national level, particularly in the context of health emergencies and pandemics, are well known. Unilateral questions about profession-specific morbidity and mortality counts across all the professions did not occur. This is likely due to the limitations of how to do so because most national associations do not have access to comprehensive and representative data. The findings suggest that there is a need to coordinate better and collect more granular data on gender, age and other equity stratifiers,, so that differences can be compared not just between various occupations but among the HCWs of each occupation as well. The five WHPA organizations, through their networks of national member associations, can advocate to countries, territories and areas to prioritize the collection of this data and thus facilitate the generation of insights into their professional populations. This will help generate the evidence to develop a more coordinated, gender and age responsive, policy response that is inclusive and equitable.

WHO estimated that between 80 000 and 180 000 HCWs could have died from COVID-19 in the period January 2020 to May 2021 *(3)*. This indicative range is still an underestimate given it derives from an overall number of 3.5 million deaths due to COVID-19 reported to WHO. In May 2022, WHO estimated that the full death toll associated directly or indirectly with the COVID-19 pandemic (described as "excess mortality") between 1 January 2020 and 31 December 2021 was approximately 14.9 million (range 13.3 million to 16.6 million) *(69)*.

As a collective voice for the five organizations, WHPA is well placed to amplify the HCWs' needs and challenges through their data collection, representation and advocacy at the global level. This assessment has shown that no single survey question specific to COVID-19 was asked identically across all five professional organizations. Therefore, a harmonized approach that is co-developed by the WHPA organizations would provide unprecedented insights into how the pandemic has impacted this professional workforce, especially as the recovery phase and 'build back better' challenges present, as well as help generate the evidence to establish key policy priorities for the HCWF. Some key messages are outlined below:

1. Utilize member representation and survey participation rates

High survey participation rates among each association were significant, particularly during an emergency response to a global pandemic. This reflects a core significance and value of the WHPA. Individual organizations represented within WHPA show combined skills in survey development, that, if aligned with the collective insights from this study, could create a unique focus on the relevant priority issues as the COVID-19 pandemic transitions into recovery and rebuilding national health systems. For example, FDI's inclusion of facility ownership (public/private sector) could inform resource trends. World Physiotherapy's inclusion of gender questions aligns with the Sendai Framework indicators *(70)* that strive to assess equity and empowerment. ICN's thorough analysis of professional education is a predictive indicator that informs global workforce supply trends. FIP's workforce surveys not only provide long-term trend information but prepares their profession for the expectation of contributing to doing so regularly *(15,16,71)*. With the average survey participation rates of 57–60% and a WHO global representation of approximately 87% of the 194 MS (while averaging 85% in each of the regions), a carefully crafted survey could yield unprecedented findings on the state of HCWs in a unique period of global health security.

The subset of 42 MS where all the five WHPA partner organizations are present could produce an insightful subset, albeit the insights would have to be interpreted with caution given country subsets of disproportionate

vulnerabilities would not be represented, e.g. small island developing states and countries affected by fragility, conflict and violence.

2. Advocate for immediate systemic MHPSS support to the global health and care workforce

The increased and sustained MHPSS risks to the global health profession cannot be overstated. Despite not having the morbidity- and mortality-specific counts, the multifaceted mental health and well-being impact on this professional population is profound. The COVID-19 pandemic has made clear that the obligations implicit in duty of care extend to the systems which support those personnel *(72)*. The consequences in this multifaceted area deserve a thorough evaluation. However, implementation of well-funded solutions is needed immediately: subcomponents of concern for personal safety (e.g. lack of PPE, effective protocols, occupational protection), public image and respect for their mission; depression, anxiety and PTSD; and inequality and discrimination at the workplace, for example. Suicide and increased accidents were not specifically discussed in the reports. The sensitivity of this topic, and the likelihood of reluctance to respond transparently combined with the range of cultural dynamics, would be as equally challenging to quantify as morbidity and mortality counts.

MHPSS models consider the scope, gravity and toll that stress can inflict on an individual. The International Committee of the Red Cross (ICRC), which focuses on conflict and chronic violence contexts, has a MHPSS assessment model *(73)* for approaching this complex topic. Some HCWs might feel that they have been working in a chronically unsafe profession since the beginning of the pandemic, despite not being classified as in a conflict zone. This topic should be informed by a well-established format for approaching this issue. A collective MHPSS-specific assessment would further inform the impact of the pandemic on this global health profession as well as harness opportunities to coordinate and act faster and with more urgency. However, sufficient evidence-based data exists to demonstrate that for the nursing population, delivering immediate resources to HCWs is urgent.

3. Integrate value and protection within the global health and care workforce

Compounding issues changing work environment and policies, secondary and tertiary impacts of fears and fatigue, and short- and long-term effects of mental and psychosocial impacts are negative force multipliers in the loss of this crucial workforce. Opportunities for positive retention of this workforce could be found in the repurposing and expanding of skill sets, as well as the recruitment of additional workforce, particularly as the skill set of providing vaccines is applied not just for COVID-19 but other vaccines as well (e.g. annual flu, malaria and long-term, well-established needs). This also supports the concept that HCWs universally should be considered as a priority group to be vaccinated and as a priority subset of those who can be trained to prescribe or distribute vaccines, depending upon their professional demands *(74)*. The FDI surveys explored this topic most deeply and provide insight into this possibility for the dental profession, but further exploration is needed for the other four professions and the potential ramifications of this concept to the HCW role.

Utilizing the role of community health personnel such as community pharmacists in remote areas is a strong strategy for potentially reaching the unvaccinated. HCWs that develop a role of trust within the communities could be a source of clarifying mis- and dis-information. FIP's reporting on the potential use of pharmacists – and potentially applied to a broader health care workforce – is a solid potential strategy in combatting both protective messaging (for the HCWs) and misinformation (of vaccination realities). Importantly, although the shifting of HCWs into different roles was discussed, reporting was not found on how the specific shift to distributing vaccines affects their associated fears or other reluctance of personal infection protection or by extension, family infection protection. Repurposing of HCWs should be carefully considered in terms of potential repercussions,

including the MHPSS dynamics, and always within the boundaries of their ethical and professional responsibilities.

Reports of feeling undervalued as a health care professional are linked to a lack of protection mechanisms, such as advocacy support, policy development and legislation implementation that reinforces their value. A lack of monitoring and surveillance of COVID-19 related infections among HCWs and the follow-up of the impact to occupational infections also presents an unknown area of impact on the profession. Both the nursing and physician professions (the former through its reporting and the latter through its policy statements) underscored this need. The importance of having professional representation at a prominent level cannot be overstated as the response phase continues for some countries and the recovery and rebuilding phases begin for others.

The stress of the pandemic on health systems and the subsequent short- and long-term strategies for regaining the ability to care for populations must be informed by experts that have navigated the systemic challenges because they are the best informants for the recovery building back strategies. HCWs' representation at the national level is essential. This could be a profound force multiplier to recruiting, maintaining, valuing, and regaining trust among health care professionals that are otherwise inclined to leave the profession for compounding reasons. Countries are called on to adopt progressive pathways for investment in the planning and financing, education and employment, and protection and performance of HCWs *(75)*. Additionally, new momentum is needed around the development of a care compact that sets out management and policy actions structured around four core domains: preventing harm; providing support; inclusivity; and safeguarding rights *(76)*.

4. Anticipate data and intelligence needs and integrate strategic planning for risk communication in preparedness strategies for health emergencies

Globally, social media has never been more pervasive, with constant flows of viral information that range in quality and content. Health emergency contexts tend to amplify these flows, and hence the pressure to manage public messaging is extreme. Organizational strategies that extend from the point of care to the community, subnational and national level must anticipate how all individuals (both giving and receiving care) can become their own media source. The challenges of the COVID-19 pandemic were unexpected, but specific tools are available to prepare for media interaction in the context of health emergencies *(77)*. Best practices for developing robust strategies that include messages to health workers about those strategies exist (Annex 3).

Providing situational awareness to the HCWF helps to generate feelings of being valued and appreciated. Providing messages that acknowledge and address the risks to the HCWF during a pandemic assures them that measures have been taken to protect their safety and security, and when necessary, that measures also exist to protect their families. If implemented effectively, media strategies can not only help protect and inform the health care workforce but support a message of value for their roles, both internal to a facility or practice and how they engage with the public. World Physiotherapy cited a clear example of how the lack of knowledge about safe operating procedures and occupational health and safety for physiotherapy practices during the COVID-19 pandemic was a concern when returning to practice after a period of lockdown restrictions *(18)*.

ICN reported the most on media forces that impact the perception of the health care professional in the broader public forum, citing that 77% of NNAs surveyed (n=50, approx.) reported an increased frequency of nurses appearing in the media during the pandemic and 66% of NNAs (n=42, approx.) reported an improved public understanding of the work of nurses *(11)*. But the commitment the HCWs make remains not well understood. For example, the National Consociation of Nursing Association of Italy stated that:

> ***"More people know about the role of nurses in health systems. But this role is often connected as a physician help profession. The public does respect the commitment of nurses" (11).***

Similarly, the General Council of Nurses of Spain further stated that:

> ***"Nurses are more in the spotlight now, although there is still a long way to go to make the nurse's job more widely understood. They know that we are there working hard but they need to understand the independence and professionalism that we have. There is still a very strong prevailing cultural belief that the nurse is under the doctor's orders" (11).***

ICN summarized their findings of public perceptions of the nursing role specifically, but this perception could likely be applied to the broader community of these five health professions:

> ***"The pandemic has brought into clear sight the relationship, disconnect and weaknesses between politics, economics, health policy, public health and the available nursing workforce across the world. This voice also needs to challenge the public's understanding of the profession and move it on from nursing tropes that serve only to devalue and limit nursing influence. The discourse needs to illuminate the public that nurses are highly educated and skilled, autonomous healthcare professionals who function as part of a team in their own right. They work in all healthcare settings, including long-term care facilities, primary health care, high-tech intensive care settings, acute care and the community. With unique insight, the nursing profession can move forward confidentially and powerfully, ensuring that its voice is not drowned out by others perceived as more powerful, in shaping the future of healthcare. This is an essential new reality" (78,11).***

Information and communication strategies were developed in response to the COVID-19 pandemic and some lessons learned have been applied, as discussed herein. However, the WHPA professions would benefit from an overarching assessment of the remaining gaps in these domains that would deepen collective priority areas of interest. Preparedness for health emergencies requires multi-year strategies that further planning activities. Areas of media content, venues, and languages all need to anticipate messaging challenges. Proactive rather than reactive information and media strategies should inform pandemic recovery and rebuilding. The lessons learnt from the pandemic are opportunities for prioritizing the issues to address while complementing them with short- and long-term visions of how preparedness strengthens building back better.

Protecting the role of the professions providing direct medical services from violence is a universal obligation. But this violence is now pervasive among health professions in general. Social stigmatization and other associated taboos of infectious disease exposure have also come to the fore and exacerbated an already existing challenge of respect for the roles of the HCW and discrimination and violence at the workplace.

Developing unified messaging for recovery, rebuilding, and preparation for the next pandemic is critical. These strategies can be informed by what has been learned to date and applied to already established guidelines, such as the Public Information Officer role that is outlined in the job action sheets within the United States' Hospital Incident Command System that is adaptable to the non-hospital context and that includes preparation for all stages of planning for a health emergency *(79)*.

5. Bolster the role of HCWs in leadership and decision-making levels

WHO and the WHPA organizations have recognized the need for effective advocacy for HCWs on many topics within their professions that must be universally achieved, for example:

- Designate the health and care sector as a sector that puts its personnel at a disproportionate occupational risk,

- Prioritize HCWs for receiving vaccines, and
- Protect HCWs from violence, discrimination and workplace inequalities.

These require adequate representation of HCWs at the planning, strategy, and decision-making levels. The workforce will continue to be vulnerable and bear a disproportionate responsibility to recover from this and other pandemics without an adequate representation or voice. They will remain in the position of having the responsibility to implement solutions without having the authority to do so. Deliberate and immediate health worker engagement at the planning, policy and finance levels should occur. Without question, doing so would make great strides in the protection and sustainability of the global HCWF and the long-lasting MHPSS challenges that have yet to fully be grasped, including the accelerating workforce shortages anticipated for 2030 *(39,40)*. The WHO/ILO guide on health and safety of health workers also emphasizes that the key elements of a national programme for occupational health and safety of workers include "A unit or person in charge of occupational health and safety of health workers designated within the ministry of health" as one of nine important recommendations *(80)*.

6. Implement strategies to address societal inequities and inequalities

Limited reporting existed on 'key manifestations of industrial actions, protests, strikes and lockouts (IAPSLs): mainly related to the general welfare of HCWs (fair pay, workload, safety, security), occupations and numbers of workers involved…' but MHPSS compounding impacts of treatment at the workplace were heavily discussed by ICN and FDI. Social inequities and inequalities in the health workplace have been exacerbated during the pandemic and have been compounded by professional uncertainty and fatigue. This impact has been witnessed on the global scale, including the access to and distribution of vaccines and on the national levels. Systemic inequities of gender were reported by both ICN and FIP, representing nursing and pharmacy respectively; although the FIP COVID-19 reporting included data from 2018, it linked to workforce intelligence (as one of its many global priorities) and goals that address gender and diversity balances. World Physiotherapy tracked male and female physiotherapists. Depending upon the other variables assessed and how the data was used in the analysis, this variable is a strong advancement in relating gender to extremely relevant issues of national and subnational equity dynamics.

Cross-correlation of variables, e.g. gender, race and minorities with propensities for violence, treatment at the workplace, and facility ownership (such as how FDI collected public/private sector data) could inform more robust policies and practices that support adhering to universal obligations. Inequalities also represent a form of discrimination and are not consistent with the obligations of the Universal Declaration of Human Rights (1948) and the International Covenant on Economic, Social and Cultural Rights (1966) "without discrimination of any kind as to race, colour, sex, language, religion, political or other opinion, national or social origin, property, birth or other status" *(81,82)*. The Convention on the Elimination of All Forms of Discrimination Against Women *(83)* is especially relevant for the health and care sector, in which women make up over 70 per cent of the workforce *(84)*. It's clear that violence at the health workplace is being reported more, especially for nurses, and these incidents of discrimination, verbal aggression, physical assaults are causing psychological distress and that the exposure will continue to have repercussions within the HCWF. The pandemic period has given additional global and national attention to this issue, and the WHPA voice could additionally support calls to action for the protection of this critical workforce.

7. Reinforce vaccination communication strategies

The known levels of vaccination coverage among HCWs (those fully vaccinated, partially vaccinated and those with no access to vaccination) are unknown due to many reasons including availability, accessibility, willingness, reluctance and other resistance-related issues. Enablers and barriers to rapidly achieving high coverage of COVID-19 immunization of HCWs reflect

the need to engage anthropologists (as has been seen during the 2015–2016 Ebola virus response), but FIP's recommendations on approaches to managing mis- and dis-information campaigns and utilizing the valuable role pharmacists play in both communication and community presence are also applicable to the other four health professions of WHPA.

Shortages of PPE to protect this workforce were pervasively reported across WHPA organizations. Fears of morbidity and mortality about the ongoing impacts of COVID-19, including spikes in variants, will continue to motivate HCWs to demand adequate PPE supplies. The inability of countries to ensure adequate supply of PPE for HCWs in the third year of COVID-19 is only a geopolitical choice, not a supply reality. Examples of question topic areas are listed in Annex 1. Particularly strong references to this topic are also published *(9,11,12,18,19,48)*.

8. Institute regular monitoring mechanisms of service disruptions during public health emergencies

Service disruption data was not extensively collected by the five health professions. The impacts of disruptions to immediate and long-term impacts need further analysis. Metrics should consider the ranges of service disruptions for prevention, chronic, and emergency care but, like the collection of morbidity and mortality data, challenges for doing so include developing consistent measures within and across the professions, having access to the data, and acquiring accurately representative sampling of causal interruption to the patient (client) care services. Secondary and tertiary impacts, e.g. how lack of prevention services impacts chronic and emergency services, other emergencies and disasters that occur in a given time frame, and contexts of chronic violence and conflict would compound the challenges of measuring this precisely. WHO's approaches to metric development such as those used in the pulse survey *(85)* for creating consistent and standardized metrics among the WHPA professions could enhance that discussion.

Student HCWs, as the pipeline for meeting the professional standards of HCWs to fully practice, are a resource that must be utilized to address the shortfall and disproportionate distribution of this professional workforce. Investigation is needed into the collective global student/in-training workforce and how this workforce can be expanded and matured to meet the future demands of the global health professionals, including the contemporary need for global health security awareness. The World Association for Disaster Emergency Medicine's Mentorship program is a mechanism that bridges new professionals into the operational context of an emergency or disaster by not directly inserting them into the context but instead utilizing their skills as a safe way to support a response while providing operational response experience *(86)*.

9. Engage individual reporting expertise from all WHPA organizations

All WHPA organizations' reports, policy briefs, press releases, etc. are well written and dense with insightful information that is deserving of individual examination. They articulated their issues and related them to the national or subnational levels to depict challenges (and where possible, creative solutions) at the national and local levels. Case studies and statements from national associations provided relatable examples. The extensive referencing therein will be valuable for WHO to further explore if specific areas of reporting prompt further questions.

ICN was particularly instrumental to its members by developing checklists and 'strategies to building trust in the healthcare systems' *(11)* (Annex 3), which is an effective way to operationalize solutions to the challenges experienced. If such an instrument were developed and applied to all WHPA organizations, it would benefit all the member associations (an examination if these already exist was not included in this analysis). These could further be aligned with the International Health Regulations (IHR) (2005) *(87)*, the Sendai Framework *(70)*, and other universal obligations and policy frameworks as means to help simplify these obligations and relate them

to recovery and essential public health functions that HCWs are already doing (and as means to clarify those concepts that can cause confusion).

10. Embed universal obligations, regulations, and guidelines in strategies that protect HCWs

HCWs' primary objective is the delivery of care. Critically, the WHPA is human-centred, focusing on the HCW as a fundamental component of health system response, and it stands behind universal fundamental principles, recommendations, regulations, etc. as a unified approach to strengthen and protect health systems and the HCW within those systems. These include the IHR and the Sendai Framework, which emphasize the need for multi-hazard risk management approaches that address biological hazards such as pandemics and epidemics alongside natural, environmental and technological hazards, as well as integrated action across the three dimensions of sustainable development and across various agreements, frameworks and conventions, e.g. the 2030 Agenda for Sustainable Development Goals (SDG) *(88)*, the Paris Agreement on climate change *(89)*, the Addis Ababa Action Agenda *(90)*, the New Urban Agenda *(91)*, the Global Compact for Safe Orderly and Regular Migration *(92)*, the SIDS Accelerated Modalities of Action (SAMOA) Pathway *(93)*, etc. Taken together, these frameworks make for a more complete agenda to deliver essential health services and essential public health functions and require action spanning development, humanitarian, climate and disaster risk reduction areas. This coherence will serve to strengthen existing risk fragility and frameworks for multi-hazard assessments, and aims to develop a dynamic, local, preventive, and adaptive urban governance system at the global, national, and local levels, for all of which the HCW is a crucial part of their support and implementation. The WHO health emergency and disaster risk management (Health EDRM) framework extends many of the aims of these universal obligations, regulations, and guidelines into the operational context of disaster risk reduction for health by identifying components of these aims and linking them to activities that operationalize these aims *(94)*.

The HCWF bears significant responsibility for actualizing universal obligations, regulations, and guidelines that ensure their protection as well as that of their patients. They must have operational support to practise policies and protection strategies to be well-equipped for the occupational health risks of health emergencies, including pandemics and have entitlements, e.g., benefits, compensation and MHPSS support. WHPA is in a valuable position to inform how countries operationalize their HCW obligations to increase global health security strategies.

Limitations

First, this report is not a summary of all the WHPA organizations' contributions and activities in relation to the pandemic response; key survey results and reports were provided to support analysis focusing on five themes derived from WHO's holistic framework to assess the impact of COVID-19 on HCWs. At least one organization (ICN) has issued another report since the reporting for this project was completed *(95)*.

Second, terminology use varies among the professions. Whereas some of the WHPA organizations use "health professional," others use "healthcare worker." "Health and care worker (HCW)" is the WHO preferred term for this study. In this report, HCWs refers to the health professionals of the five WHPA organizations. No specific definition was provided for the professions, which is understandable given that most professions are defined in-country and variances are inevitable. No distinction was made for "HCWs" across both public and private sectors *(9)*. Throughout the report, however, terms are used that reflect the global variations (and to some extent the lack of standardization) across countries.

Third, the COVID-19 pandemic continues to evolve globally; many organizations and expert individuals have published through peer-review, surveying and collecting data from select populations, to inform the international community as expeditiously as possible regarding relevant concerns and indications of trends.

Fourth, all WHPA organizational surveys mentioned cannot be interpreted directly into individual reports, i.e. as a one-to-one analysis. Many reports were informed either by a single survey or multiple surveys, as in the cases of ICN (nursing) and FDI (dentistry) or built upon a series of surveys, as in the case of FIP (pharmacy). All reports combined survey sampling and industry knowledge to triangulate findings and many solely provided percentages in their discussions, not specific survey participation counts. Therefore, this collective report uses approximations of sample sizes from the percentages provided. Further, changing member demographics, counts and percentages also support interpreting the numbers as estimates.

Fifth, WHPA organizational member counts cannot be interpreted equally to country member representatives because more than one member organization can be represented within a country. However, in at least one WHPA organization's bylaws, more than one organization representing a country/territory/administrative region cannot occur (World Physiotherapy). Further, over time the membership fluctuates, which has continued during the pandemic (and will continue after the pandemic) and changes the members survey sizes and the resulting participant samples. Therefore, the percentages and approximate sample sizes used herein should be interpreted as estimations that provide solid indicators (not precise indicators) of the possible and actual engagement of the WHPA's five health professions during the COVID-19 pandemic.

Finally, the report is a descriptive analysis of the WHPA organizational surveys. The findings may be considered as the prevalent perceptions of the national member associations of the WHPA organizations. Due to the variance in the number of national associations which responded to various surveys, the data has been presented for illustrative purposes only and may not be nationally, regionally or globally representative, and hence may not be utilizable as is for HCWF planning or policy-making. In addition, since most of the WHPA surveys and reports were conducted during the initial period of the pandemic, the data may not be reflective of the current situation in countries and also may not be able to accurately capture the overall impact of the COVID-19 pandemic on HCWs. Nevertheless, this report can be considered as a snapshot in a particular period of time and its five themes and key findings would be particularly useful for strategic communications and advocacy to policy-makers, donors, multilateral organizations, civil society organizations and communities on addressing the multidimensional impacts of COVID-19 on HCWs and the importance of investing in, protecting and safeguarding the HCWF.

Conclusion

The primary objective of this report is a synthesis of evidence generated by the WHPA organizations through their surveys and reports during the COVID-19 pandemic, guided by WHO's standardized framework to assess the multidimensional impact of COVID-19 on HCWs. Nine core reports from four WHPA organizations were analysed. The fifth organization did not survey its population and instead represented its member support via its policy development of declarations, resolutions and statements, providing examples of how WMA addresses relevant topics to physicians.

Collecting standardized evidence-based data continues to be a challenge. WHPA organizations continue to reinforce their critical role as non-state actors in their approaches to these challenges by integrating metrics in their reporting that can add insight and improve the comparability of results. Trust in each organization is evidenced by their voluntary survey participation rates, their presence within countries, territories and areas and how that presence comprehensively overlaps in 42 WHO MS and is partially represented in 169 WHO MS. Individual member association representation is not comprehensive, however, because a single member association of any country may not represent the entire country.

The five themes examined in this evidence synthesis have overlaps. The report strongly reflects a diversity of priorities within the WHPA organizations and provides a deeper understanding of the occupational risks that the COVID-19 pandemic has inflicted on HCWs in alignment with the four domains of WHO's framework. It reveals the priority issues for WHPA organizations, that represent 41 million health care professionals, and how they continue to serve their professions during this protracted health emergency.

Many of the issues discussed herein have primary and secondary impacts on HCWs (e.g. disruptions of health services, shifting functions, vaccination access) as well as immediate impacts (e.g. safety, security, exposure to violence) and long-term effects (e.g. educational delays in those entering the professions, or departures from the profession entirely). MHPSS challenges have a pervasive presence across all contexts and professions. Compounding emergencies and disasters were not discussed but these circumstances have also occurred during the pandemic and most certainly exacerbated the issues discussed herein for HCWs. Issues of recovery and building back better were not discussed within the WHPA reports but could be considered for future data collection efforts.

Future investigation of these issues should involve a select set of questions that uniformly investigates all organizations and that builds upon these collective findings. From this, strategies that guide recovery plans, policy development and future investments to strengthen the protection and stability of the HCWF at the national and global levels can occur. Gaps that may exist within the HCWs that are relevant to this discussion include facility-based HCWs that are not represented by the WHPA organizations and the temporary/transit/volunteer HCWs that have deployed as surge capacities during the COVID-19 health response. HCWs occupational protection is imperative for all, especially in the context of better preparedness and response to future threats and emergencies.

Further data collection by WHPA and similar stakeholders can consider questions outlined in Annex 1 that speaks to both the WHO-specific themes and the priority areas identified within this report. Individual organizational survey questions are provided as examples and extensively referenced. It can also provide examples of the WHPA-approved approaches to question design. This is not exhaustive and should continue to evolve with evidence-based findings as the world transitions out of the 2020 pandemic, and global heath recommendations and directives are identified. For example, HCW protection

and HCW contribution to health systems strengthening must reorient itself to core public health principles such as strengthening equitable access to primary health care (PHC) for all. The WHPA is central to achieving this crucial aim.

A longer contribution of these findings and the potential WHPA role is in developing and strengthening HCWs' contribution to the health of the patients and communities they serve via highlighting resources and tools. WHO, countries and health leaders make concerted efforts at representing and safeguarding their HCWs but the pandemic impact has reemphasized the critical 'whole of society' and 'multi-sector' collaborative roles as crucial in global preparedness and health security. An immediate potential role of WHPA organizations could be to educate their members on the tools that are applicable and available to them as they transition into recovery and building back better within their respective countries, territories and areas, for example via a better understanding of how their HCW roles are represented within the universal obligations, frameworks, and national policy recommendations as they relate to the SDGs, the Sendai Framework and the IHR (2005). An opportunity exists for WHPA interprofessional collaboration to align its aims in the current timeline structures of 2030. As the WHO website mentions —

> ***"Another feature of rights-based approaches is meaningful participation. Participation means ensuring that national stakeholders – including non-state actors such as non-governmental organizations – are meaningfully involved in all phases of programming: assessment, analysis, planning, implementation, monitoring and evaluation and the protection of the health and care workforce that are providing that rights-based assurance" (96).***

The WHPA, through its representation of its member base, is a crucial non-state actor that can continue to promote this right by identifying, strengthening ownership and momentum for, and implementing policy responses during the recovery phase and in stewarding the future development of HCWs in the post-pandemic context.

Annex 1: A compilation of WHPA organizations' survey questions

Annex 1 includes the original questions used by the WHPA organizations in their surveys which were presented in different question formats and terminologies. This section aims to provide a reference for the information mentioned in the report and to inform readers of the diversity of contributions by all the global organizations. All questions are categorized by topics and components.

Key demographics and socio-economics (gender, sector, economic status)

How many men and women are members of your organization? Please only include [professional] members. Please leave blank if you are not sure of the numbers. The percentage of female [professionals] will be displayed on the [profession] website [female and males with space for integer]. [*(18)*, survey question 1.2]

- Is this number from an official source (for example, a government department, registration authority or statistical agency)? [*(18)*, survey question 2.2]
- What is/are the source(s) of data for this number? Please list each source with its web address. [*(18)*, survey question 2.3]
- Is there more than one professional organization for [professionals] in your country/territory? [*(18)*, survey question 9.1]
- How many people are practising as [professionals] in your country/territory, even if they are not members of your organization? Please do not include [students or assistants] in this number. Please use all available sources of information to get the best estimate. [Free text, integer]. [*(18)*, survey question 2.1]
- Is this number from an official source (for example, a government department, registration authority or statistical agency)? [Yes, this number is from an official source; No, this number is estimated]. [*(18)*, survey question 2.2]
- What is/are the source(s) of data for this number? Please list each source with its web address. [*(18)*, survey question 2.3]
- Do the majority of [professionals] in your country work in public or private practice: [a. Majority in public practice, b. Majority in private practice, c. It is about equal, d. Don't know] [*(12)*, survey question 3]
- What is the total number of [professionals] in your country or territory (all areas of practice)? [Number Year of data (if not 2020) Source of data (or "Est." for estimates).] Additional questions include number of community [professionals] and number of [support personnel]. [*(71)*, survey question 1]
- Consistent with our previous FIP reports, the standardized unit of measurement of capacity is pharmacists per 10,000 population. It was conducted using member organization email contacts obtained from FIP and website

information, and conducted at repeated intervals over the time period 2007–17 (2006) data was collected in 2007, 2009 data was collected in 2010 and so on), with follow up for non-responders. Basic headcount capacity data for each valid country case was standardized with date-specific country population for each data point to provide a measure of capacity (capacity is measured as "density", the number of pharmacists per 10,000 population). A mixed-model repeat measures analysis was performed to assess changes in trend for the pharmacy workforce of each country in relation to workforce size and capacity (standardized by population) and sub-trends associated with economic status and gender distribution. [*(15)*, page 9]

Impact of COVID-19

- Do you know the number of COVID-19 infections among healthcare workers in your country? [No, Yes (with field for text).] [*(11)*, survey question 2]

- Do you know the latest number of deaths from COVID-19 among healthcare workers in your country? [No, Yes (with field for text).] [*(11)*, survey question 4]

- Has any data been collected in your country on the proportion of [profession] that have been infected with COVID-19 through their work? [a. Yes: If yes, please provide links or upload files b. No c. Don't know. Yes, please specify the number, date and source] [*(12)*, survey question 6]

- How has the COVID-19 pandemic affected your organization's budget projections for 2021? [Free text] [*(18)*, survey question 4.2]

- Has your organization carried out any advocacy on behalf of your members during the COVID-19 pandemic? [Yes/No/Free text] [*(18)*, survey question 4.5]

Impact on mental health

- Questions on the topics of exhaustion, burnout, moral distress, overwhelmed, difficulty sleeping, symptoms of anxiety, symptoms of depression, post-traumatic stress disorder, suicide or suicidal thoughts, fear (of infection from carrier patients), heavy workloads, isolation, insufficient resourcing with each defined by example for clarity (when needed and if possible, by a gradation of impact).

- How often does your association/organization receive reports of mental health distress from [professionals] in COVID-19 response? [Regularly Sometimes Rarely Never Don't know / unsure] [*(11)*, survey question 8]

- Do confidential mechanisms exist for staff reporting a mental health concern?

- How prepared is your country and healthcare providers to support the psychosocial well-being of [professionals]? [5-point Likert scale from not prepared to well prepared.] [*(11)*, survey question 9]

- Other question topic areas/mechanisms that exist in support of HCW well-being, including access to individual mental health and counselling services, such as 24/7 support helplines, one-to-one therapy with clinicians, peer support and stress relief programmes.

- Questions also include:
  - Availability of services, e.g. in hospital, clinic, non-work contexts and degree of utility for HCWs and for full-, part-time and temporary workers, confidentiality of services
  - Informal networks to offer peer support
  - Available resources for long COVID circumstances

- Questions about the organizational level interventions that may be available to address workplace systems and culture, specifically on workplace mental health support, identifying barriers to accessing care, and broadly on the prevention of risk factors, such as improvement of working conditions.

Impact on professional practices

- Is the SARS CoV-2 infection recognized as an occupational disease and that the medical profession be declared a "profession at risk". [*(28)*]

- Has any data been collected in your country on the proportion of [profession] or other HCWs that have been infected with COVID-19? [a. Yes: Please provide links or upload files b. No. c. Don't know.] [*(13)*, survey question 5]

- Is there a shortage of PPE (masks, goggles, surgical gowns etc.) for [profession] in your country? [a. Yes b. No c. Don't know.] [*(12)*, survey question 5]

- Has practice been interrupted in your country/territory during the COVID-19 pandemic? [1st question Yes/No. 2nd question bullet points below. 3rd question free text for providing details.]
  [Profession] in private practice has been interrupted
  [Profession] the public health system has been interrupted
  [Profession] in community practice has been interrupted
  [Profession] practice in [XX] homes has been interrupted Other (please specify) [*(18)*, survey question 5.1-5.3]

- Have [Profession] in your country/territory had difficulties accessing PPE during the COVID-19 pandemic? [Or, are they still] [Yes/No/Free text]. [*(18)*, survey question 5.5]

- Over the last three months, has there been a reduction or increase in the number of [profession] contracting COVID-19 as a result of their work? [5-point Likert scale from decrease in the rate of infections amongst [profession] to Increase in the rate of infections amongst [profession]. Please describe the source of your information with text field for response. [*(11)*, survey question 10]

- Currently is there an adequate supply of appropriate PPE provided to [profession] caring for suspected or confirmed COVID-19 patients in all healthcare settings? [Tick most appropriate box in each column]. [*(11)*, survey question 11]

	PPE supplies are always adequate	PPE supplies are sometimes adequate	PPE supplies are rarely adequate	PPE supplies are never adequate	Don't know/unsure
Private hospitals	○	○	○	○	○
Public acute hospitals	○	○	○	○	○
Public non-acute hospitals	○	○	○	○	○
Long-term care facilities	○	○	○	○	○
Primary health / community settings	○	○	○	○	○
Schools	○	○	○	○	○
Correctional facilities	○	○	○	○	○

Comments:

- Have governments or health systems issued specific policies to protect [profession] and other HCWs during COVID-19? [Yes/No/Don't know/Please describe (text field).] Comment: here a gradation of activities from recommendations to laws/legislation could be asked. [*(11)*, survey question 17]

- Has your country adopted or committed to the *WHO Patient Safety and Health Workforce Charter?* [Yes/No/Don't know/Comments (free text).] [*(11)*, survey question 15]

- Does your country have any guidance in place for continuing or returning to [professional] practice, such as: modified treatment protocols, PPE and IPC measures, risk assessment, patient intake procedures or personnel restrictions: [a. Yes: If yes please provide links/explain or upload files b. No c. Don't know] [*(12)*, survey question 7]

- Does your [National Professional Association] have initiatives to improve access to PPE for dentists in your country? [Yes b. No c. Don't know] [*(13)*, survey question 4.1]

- Is sufficient provision of equipment and personal protection material (PPE) for HCWs, which allows healthcare and guarantees the availability of this material in a situation of possible outbreak? [*(28)*]

- Is the HCW a priority, especially in the field of mental health [*(28)*]

Testing and vaccination coverage

- Have [profession] been prioritized to receive testing for COVID-19? [Yes/No/Unknown/Please describe (free text]. [*(11)*, survey question 6]

- Has your government committed to prioritize COVID-19 vaccinations for [profession] and other healthcare workers once they are available? [Decrease in the rate of infections amongst [profession], Increase in the rate of infections amongst [profession] [*(11)*, survey question 7]

- Are [professionals] currently permitted to administer COVID-19 diagnostic tests in your country? [a. Yes, to increase the capacity of the national testing regime. b. Yes, as a point-of-care measure prior to [professional] treatment. c. No. [professionals] are not permitted to provide tests. d. Not currently, but discussions underway to permit testing by [profession]. e. Don't know.] [*(13)*, survey question 13]

- If [a] or [b], Can [professionals] administer (please select all that apply): [a. RT-PCR tests b. Rapid antigen tests c. Don't know.] [*(13)*, survey question 13.1]

- Will [professionals] be permitted to administer any forthcoming COVID-19 vaccine as part of your country's planned vaccination programme? [a. Yes. b. No. c. To be confirmed, [profession]' role being discussed. d. To be confirmed, no discussion of [profession]' role to date. e. Don't know.] [*(13)*, survey question 14]

- Are [professionals] in your country permitted to administer influenza vaccines? [a. Yes. b. Not currently, but it has been permitted in the past. c. No. d. Don't know.

- Will [professionals] be included in a priority vaccination programme for healthcare professionals (HCPs) in your country? [a. Yes. b. No, priority HCP vaccination is planned but [professional] are not included. c. No, there is no priority vaccination planned currently. d. Don't know.] [*(13)*, survey question 16]

Repurposing, redistribution

- Have [professionals] in your country worked or volunteered in other non-[profession] healthcare roles during the crisis? [(Please select all that apply) a. Yes, through an official system or programme established by health authorities, NDA etc. b. Yes, organized by themselves or individual clinics/hospitals c. No d. Don't know] [*(12)*, survey question 12]

- Have [professionals] in your country worked, been redeployed or volunteered in other non-[profession] healthcare roles during the crisis? [(Please select all that apply) a. Yes, through an official system or programme established by health authorities, NDA etc. b. Yes, organized by themselves or individual clinics/hospitals. c. No. d. Don't know. If [a] or [b], please provide links/explain, or upload files.] [*(13)*, survey question 12]

Public image of [profession]

- Do you agree with this statement "There been an increase in the frequency of [profession] appearing on/being interviewed in the media."? [Likert scale of Strongly disagree to Strongly agree, Please describe (with text field).] [*(11)*, survey question 56]

- Do you agree with this statement "The public has responded positively and publicly in support of [profession]."? [Likert scale of Strongly disagree to Strongly agree, Please describe (with text field).] [*(11)*, survey question 57]

- Do you believe there has been an improvement in public understanding of the work of [profession]? [Yes, No, Unknown, Please describe (with text field).] [*(11)*, survey question 58]

Government and regional level support

- In your country, does the government or a formal health agency publish any guidelines for reporting infections and deaths from COVID-19 in healthcare workers? [No, Yes (with field for text).] [*(13)*, survey question 6]

- Does your country currently have any guidance in place for practicing [profession] during the COVID-19 pandemic: e.g. modified treatment protocols, PPE and IPC measures, patient intake procedures, etc. [Please provide links or upload files for all types of guidance issued since [Date]: a. Yes: If yes please provide links/explain or upload files. b. Yes, already provided guidance through the last survey and no updates are available. c. No. d. Don't know] [*(13)*, survey question 6]

- Has your government provided, or does it plan to provide, any subsidies or financial assistance to ensure people in need can continue to access [professional] care during the current economic crisis? [a. Yes: If yes, please provide links/explain or upload files b. No c. Don't know If [a] or [b], please provide links/explain, or upload files] [*(12)*, survey question 10]

Coordination support

- What other actions has your organization taken to support your members during the COVID-19 pandemic? (please select all that apply)
  COVID-19 specific education or training (face to face)
  COVID-19 specific education or training (online)
  Reduced/subsidised membership fees
  Facilitated access to PPE for physiotherapists
  Other (please specify) [*(18)*, survey question 4.7]
- Other suggestions:
  - How to manage communications, e.g. disinformation, misinformation
  - Advocacy-specific messaging

Communication campaigns and advocacy

- Has your organization provided any COVID-19 specific information or resources for your members? (please select all that apply):
  - [Practice based resources (for example, clinical guidelines, practice management, IPC, publications)
  - Information for patients
  - Education based resources. Information relating to professional regulations
  - None] [*(18)*, survey question 4.4]

- Has your organization carried out any advocacy on behalf of your members during the COVID-19 pandemic? [Yes, No] Follow up: If you answered Yes to question 4.5, please provide details [Free text.] [*(13)*, survey question 4.5-4.6]

- Has your organization provided any COVID-19 specific information or resources on vaccine reluctance for your members? [Please select all that apply.]

- See also FIP's report on building vaccine confidence and communicating vaccine value: A toolkit for pharmacists [*(52)*]

Registration and regulation

- Since the pandemic began, have there been any changes to [profession] registration or regulation to fast track [profession] re-entering (re-registering) the workforce? [Yes/No/Unknown/Please describe with (with text field).] [*(11)*, survey question 32]

- Has there been an increase in the number of people re-entering (re-registering) the workforce? [Yes/No/Unknown/Please describe (text field).] [*(11)*, survey question 33]

- Have students in their final year of study been fast-tracked into the [profession] workforce? [Yes/No/Unknown/Please describe (text field).] [*(11)*, survey question 34]

- Has your government fast-tracked work permits for foreign [professionals] who are already in your country but had not been fully registered? [Yes/No/Unknown/Please describe (text field).] [*(11)*, survey question 35]

- Have there been any changes to regulation regarding the [profession]? [No changes, Negative changes, Positive changes, Positive and negative changes, Please describe if these are temporary or sustained/permanent (text field).] [*(11)*, survey question 36]

Reasons for leaving the profession

- In [date], was there a change in the number of [professionals] leaving the [profession]? [5-point Likert scale from less left the profession, about the same (mid-point), more left the profession.] If not a concern, please skip the question. [*(11)*, survey question 21]

- If yes, why? [5-point Likert scale for each of the following]
  - MHPSS, from mental health (burnout) to psychosocial concerns (depression)
  - Morbidity, from individual to family concerns
  - Workplace violence, from concerns of threats to actual incidents
  - Inequalities, from subtle to overt discrimination
  - Conditions, including lack of/delay in acknowledgment, benefits, pay, etc. [*(11)*, survey question 9]

- [5-point Likert scale from Major reduction in the number leaving, Same number leaving (midpoint). Major increase in the number leaving, with option for text field response.]

	Not a concern	Somewhat concerned	Extremely concerned
Burnout, increased stress and other psychological demands	○	○	○
Limited reward for the effort	○	○	○
Fear / Risk of catching COVID	○	○	○
Lack of PPE	○	○	○
Heavy workloads and insufficient resourcing	○	○	○
Workplace culture	○	○	○
Lack of autonomy and empowerment	○	○	○

Other (please specify):

- Has your country or health system committed to increasing the number of [professionals]? [Yes/No/Unknown/Please describe (with text field).]. Comment: Follow up to Yes, 'How?' with table of options or text field. [*(11)*, survey question 28]

- What is the recruitment of overseas educated [profession] to your country? [*(11)*, survey question 29]

	Major reduction in recruitment	Slight reduction in recruitment	No change in recruitment	Slight increase in recruitment	Major increase in recruitment
2016	○	○	○	○	○
2018	○	○	○	○	○
2020	○	○	○	○	○

Other comments:

- What is the recruitment of overseas educated [profession] from your country? Comment: modify table above.

- Has your country committed to improving the retention of [profession] currently in employment to assist in addressing current or future shortfall in the [profession] workforce? [Yes/No/Unknown/Please describe (with text field).] [*(11)*, survey question 31]

- Does your government have a professional representative at XX level, e.g. local, regional or national? [Yes/No/Unknown/Comment (with text field).] [*(11)*, survey question 37]

- Is this role actively involved in the XX level decision-making process, e.g. local, regional or national? [Yes/No/Unknown/Comment (with text field).] [*(11)*, survey question 38]

- Have there been any reported COVID-19 related incidents of violence, assaults or discrimination against [profession] in your country? Comment: This question needs to be informed by the WHPA organizations in how they think violence might be affecting their professionals. A grid of options should be included. [*(11)*, survey question 59]

Education and training

- Is your association actively engaging with student [professional] organizations? [Yes/No/Unknown/Please describe (text field).]

- If yes, is this/are the student [professional] organization(s) helping to fill gaps in the COVID-19 professional response? [Yes/No/Unknown/Please describe (text field).]

- If yes, a result of the pandemic, has there been a change in the interest in the number of applicants applying to study [profession] [5-point Likert scale from Major reduction in the number of applications/Same number of applications (centre of scale)/Major increase in the number of applications, with option for text field response.] [*(11)*, survey question 25]

- Can [profession] working in private practice [and/or public practice] in your country/territory vaccinate others? [What restrictions, protocols apply). [Yes/No/Unknown]. [*(18)*, survey question 15.1]

- What is the impact of the outbreak on [professional] education in your country? [a. All classes stopped b. Only online theoretical classes held c. Online theoretical classes held and urgent clinical procedures performed by students d. Online theoretical classes held and urgent clinical procedures performed by professors e. No change – all education proceeded as normal f. Other, please provide links/explain or upload files] [*(12)*, survey question 14]

- Is this current practice guidance compulsory? [a. Yes, compulsory for all [profession] b. Yes, compulsory for public sector [profession] only c. Yes, compulsory for private sector [profession] only d. No. e. Don't know.] [*(13)*, survey question 16.1]

Financial implications

Is any data or information available about the financial impact of the outbreak on [professional] practices in your country, for example related to lost earnings, practice closures, job losses or trends in patient visits? [a. Yes: If yes, please provide links or upload files b. No c. Don't know] [*(12)*, survey question 9]

Future of the profession

What are the top five priorities for your country's health system moving into the future? Comment: This question needs to be informed by the WHPA organizations in how they think violence might be affecting their professionals. A grid of options should be included and not only free text. [*(11)*, survey question 62]

What are the top five issues your [professional] organization will be addressing over the next year? Comment: This question needs to be informed by the WHPA organizations in how they think violence might be affecting their professionals. A grid of options should be included and not only free text. [*(11)*, survey question 63]

Annex 2: Countries, territories and areas not included in WHPA-WHO-MS representation

Countries, territories and areas where WHPA has representation but are not WHO Member States (n=10)	Countries, territories and areas where WHO Member States do not have WHPA representation (n=25)
Aruba	Antigua and Barbuda
Bermuda	Brunei Darussalam
China, Hong Kong SAR	Burundi
China, Macao SAR	Central African Republic
Chinese Taipei	Comoros
Guam	Djibouti
Holy See (Vatican)	Dominican Republic
Kosovo	Equatorial Guinea
Liechtenstein	Guinea-Bissau
West Bank and Gaza Strip	Kiribati
	Lao People's Democratic Republic
	Libya
	Maldives
	Marshall Islands
	Micronesia (Federated States of)
	Nauru
	Niue
	Palau
	Saint Kitts and Nevis
	San Marino
	Tajikistan
	Tonga
	Turkmenistan
	Tuvalu
	Vanuatu

Annex 3: Lessons learnt and best practices published by members of WHPA

This reporting would be remiss not to include the ICN recommendations given their pervasive reporting on the nursing profession before and during the COVID-19 pandemic. The key recommendations are listed below, with commentary provided.

1. **Implement standardized data collection on HCW infections and deaths** *(9)*. A more refined strategy on how this activity could be implemented is needed among the WHPA organizations, such as the inclusion of relevant equity stratifiers like age and gender. It may be that identifying, rather than implementing, where the resources are now; as data collection has likely developed differently in countries. However, WHPA could develop recommendations for standard metrics (e.g., vaccinations per 100 individuals or vaccinations per 100 HCWs) so that they are cross-comparable and therefore more standardized for resource allocations, supply chains, etc.

2. **Capitalize on the current societal value of the HCW that is recognized by the public.** In global health history, never has the HCW been pervasively and universally recognized and revered for its societal role as they have during the COVID-19 pandemic. Every country has demonstrated its fragility. Increased funding, policies, reinforcement of policies, and intersectoral long-term strategies that extend from the local to the country levels are crucial to preventing societal impacts of health emergencies.

3. **Strengthen government policies and actions to reduce the count of nurses that are leaving the profession by improving retention strategies** *(40)*. "Whole of society" and "whole of government" approaches *(97)* are the most effective way to strengthen health systems that can deliver essential health services and EPHFs at the local level. WHPA could take a collective role in educating national members on these concepts and making recommendations on how to approach doing so. WHO's Glossary of Health Emergency and Disaster Risk Management Terminology *(98)* is a solid tool for clarifying term use.

4. **National health emergency frameworks are necessary to include nursing students in pandemic preparedness and response planning.** This topic is highly relevant and deserves a distinct section in HCW education curricula (10).

5. **Recognize COVID-19, and other equally severe workplace exposures, as an occupational risk** *(9)*. The WHO/ILO guide on health and safety of health workers (2022) also supports this direction *(78)*.

6. **Ensure sufficient provision of appropriate PPE and evidence-based IPC training for HCWs in all healthcare settings** *(9)*. Supply chain management of materials and supplies is more likely to be assured and provided if local vendor relationships are established and maintained well in advance of a crisis; now is the time to establish and maintain those relationships.

7. **Commit to a zero-tolerance approach to violence and discrimination against nurses and other HCWs** *(9)*. Strategies for how to implement such systems exist and can be distributed to national associations. Implementation and reinforcement of protection policies are necessary. Further, four of the five WHPA organizations are partners with the

ICRC "Community of Concern" for the Health Care in Danger Initiative and play roles in advocacy for the prevention of violence against HCWs.

8. **Reorient healthcare system planning to primary health care as a mechanism to 'creating health' within societies that ultimately reduces the acute care demands.**

For further information on the ICN's recommendations, please check the various publications from ICN *(9-11,40)*.

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