

POLICY REPORT

FIT FOR WOMEN?

SAFE AND DECENT PPE FOR WOMEN HEALTH AND CARE WORKERS

November 2021



Women in Global Health Series: Gender Equity and the Health and Care Workforce



WGH | WOMEN IN
GLOBAL HEALTH

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FOREWORD



COVID-19 has changed the world profoundly, causing death and devastation now and aftershocks that will scar future generations. This is a break in history and our opportunity to rebuild global health on a stronger foundation by ensuring that the women who largely deliver health systems have safe, decent and equal work. Safe work requires the protection of effective personal protective equipment (PPE).

Women health and care workers have been applauded for their dedication in the pandemic but gender inequity is hard wired into the health and care workforce, with women clustered into lower status and lower paid sectors and marginalised in leadership. Gender inequality is a major explanation for the shocking survey findings presented in this report showing that women have been left at risk in the pandemic by lack of PPE or PPE that did not fit their bodies or bodily needs.

Gender equity in the health and care workforce is not a marginal women's issue, it is central to strong health systems and global health security. Women are 70% of health and care workers globally and by protecting them we protect the health systems that our lives depend on. Women health and care workers want the means - decent work, safety, dignity, fair pay and equal leadership - to deliver the best possible health services for everyone.

Women health and care workers are proud of the contribution they have made but after nearly two years of a global pandemic they are burnt out and exhausted. We cannot expect women to go back to business and gender inequality as usual as we emerge from this pandemic. Women health and care workers need a new social contract based on equality, safety and dignity and that will be the foundation for strong health systems and global health security.

- Dr. Roopa Dhatt, Executive Director, Women in Global Health

"PPE is essential for us community health workers because it gives us the confidence to do our job. Sometimes patients are rejected by their families due to their illness; for us to give them the love and care they deserve, we need to be protected. In presumptive cases of COVID, we need to be protected. PPE must be provided for front line health workers. We community health workers risk our lives to save others: we need PPE. During the pandemic we have come together but we need more support. When you protect the community health workers you protect the whole nation."

- Ramatu Jalloh, community health worker, Sierra Leone



Throughout the COVID-19 pandemic, frontline health workers have continued to play a key role in protecting their communities by providing vital and often life-saving care. Despite women making up 70% of frontline health positions and 72% of skilled health occupations globally, PPE is still designed for men. This lack of recognition puts the front line of primary healthcare "last in line" for this essential equipment, which both diminishes frontline health workers' role in the health system and threatens community health programs. Without vital PPE, those on the front lines fighting to keep their communities safe are put at the greatest risk. At the Johnson & Johnson Center for Health Worker Innovation, we work to help ensure that health workers' voices are heard and to improve the safety of their working conditions. We do this because we believe that solving the challenges faced by frontline health workers will help improve healthcare for everyone.

This is why we have come together in collaboration with Women in Global Health to develop this report as a critical step to providing safe and decent PPE for women health and care workers.

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ACRONYMS

CHW: Community health worker

HCW: Health and care worker

IFC: International Finance Corporation

ILO: International Labor Organization

LMIC: Low- and middle-income country

PPE: Personal protective equipment

UHC: Universal health coverage

WGH: Women in Global Health

WHO: World Health Organization

YCHW: Year of health and care workers

GLOSSARY

Common PPE used during COVID-19 includes:

Particulate respirator ('N95', 'FFP3'): Respiratory protective devices designed to achieve a very close facial fit and very efficient filtration of airborne particles; the edges of the respirator are designed to form a seal around the nose and mouth.

Surgical masks: Disposable devices that create a physical barrier between the mouth and nose of the wearer and potential contaminants in the immediate environment; the edges of the mask are not designed to form a seal around the nose and mouth.

Goggles: Placed snugly around the eyes to provide the most reliable eye protection from splashes, sprays, and respiratory droplets.

Face shields: Worn around the head and over the face; designed to provide protection from splashes of respiratory secretions.

Gloves: Disposable patient examination gloves; can be sterile or nonsterile.

Coveralls: Step into full body coveralls.

Gowns: Can be surgical or isolation; cover both arms and fabric should wrap around the body, covering front and back, with ties securing back coverage.

Aprons: Single-use straight sleeveless protective apron; can be adjusted/fastened.

Fit test: Process used to evaluate the effectiveness of seal for tight fitting respiratory protection devices. Quantitative fit testing uses a machine to measure the amount of leakage into the facepiece; qualitative fit testing uses a subjects' sense of taste or smell, or a reaction to an irritant to detect leakage into the respirator facepiece.

EXECUTIVE SUMMARY

Personal Protective Equipment (PPE) has become one of the defining issues of the COVID-19 pandemic. As the COVID-19 virus spread and patient numbers surged in the first quarter of 2020, reports appeared in the media of women health and care workers (HCWs) unable to access PPE working in garbage bags, forced to wear adult diapers, suffering cut and bruised faces from long shifts in PPE and even going on strike.

Shortages of PPE for health and care workers are not new, especially in low-and middle-income countries. The pandemic, however, exposed the particular problems faced by women HCWs using PPE. WHO reports that 115,000 health and care workers have died due to COVID-19, almost certainly an underestimate, and millions will suffer longer term health impacts from having been infected. Health and care workers need to be protected from the health-related risks they face at work.

The World Health Assembly designated 2021 as the International Year of Health and Care Workers (YHCW) with the themes 'Protect. Invest. Together'. YHCW highlights the urgent need to ensure that health and care workers - 70% of whom are women - are supported, protected, motivated and equipped to deliver safe health care at all times, not only during COVID-19. PPE is a critical line of defense for the protection of HCWs, and that was especially so at the start of the pandemic, in the absence of vaccines or therapeutics for COVID-19.



*"There was **poor planning, neglected supply chain management, corruption and inadequate prioritization...**a lot of the times the people that are in charge of these decisions are not necessarily clinically based, and they don't have the clinical insight and knowledge to understand the real impact of what they are deciding."*

- Doctor, South Africa

Also in 2021 the Government of France, the World Health Organization and Women in Global Health have partnered on the Gender Equal Health and Care Workforce Initiative (GEHCWI), which aims to inspire action in the health and care sectors on safe and decent work for women. This includes ending informal work, which is often unpaid or under paid, fostering equal opportunities in health and care occupations, ending violence and harassment of HCWs, and promoting the equal participation of men and women in leadership and decision making across the sector. One of the four pillars of the Initiative is to ensure safe and decent working conditions for all HCWs everywhere, including the provision of PPE designed to fit women.

As a response to women's feedback on deficient PPE during the pandemic, Women in Global Health launched a research project in 2021 to document and better understand gendered challenges around PPE in the health sector, including an online survey and interviews with women HCWs in over 50 countries. Our objective was to elevate the voices of women to enable health sector policy makers, employers, standards bodies, and industry to better understand the challenges women have faced during the COVID-19 outbreak regarding PPE access, fit and design. By documenting women's experiences and suggestions, we aim to inform global initiatives to make PPE manufacturing standards gender responsive and increase safety and dignity at work for women HCWs.



Whilst some of the challenges around PPE (for example, shortages and poor quality) affect HCWs of all genders, women are 90% of nurses and have been the vast majority of HCWs in patient facing roles in the pandemic. Therefore, if medical PPE is not fit for women, it is not fit for the majority of the health workforce. Our findings show that PPE manufacturing standards pay too little attention to the needs of women and our research has confirmed what many women HCWs already knew: **PPE is not fit for women.**

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“Me and my female colleagues had problems with those big masks. Also, the gowns were way too big, sometimes I even slipped on them because they were so long, I couldn't walk properly. The goggles always slid down the nose, so sometimes out of reflex, I pushed them up when my gloves were already possibly contaminated.”

- Nurse, Australia

Although PPE is a universal challenge for women HCWs, it does not manifest equally across regions and HCW cadres. HCWs in high income countries have generally had access to PPE, while many in low-income countries have had and still have limited access to PPE. PPE is an equity issue. Within all health systems, because women tend to be clustered in lower status roles, our data finds women have often been less able than their male counterparts to access PPE. There is also evidence that women from racial and ethnic minorities have been less protected, highlighting the intersectionality of gender inequities in the health workforce.

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“...Mostly, it's the men who are at the top. And so, they're the first priority...The [gender] dynamics have been playing out, where women are expected to do the dirty work, but without getting any protection. I have seen this trend in different departments, and am hearing it from female friends in different fields - nurses, pharmacists, physiotherapists - and when we complain about being sent out into the field without proper protection, we get labelled as being stubborn.”

- Community psychologist, Malawi

After almost two years of a global pandemic, millions of HCWs around the world, especially women, are burnt out and planning to leave the profession. This report therefore lands at a critical time. When the pandemic began, the world had a severe shortage of HCWs, with an additional 18 million alone needed in low-and middle-income countries to achieve UHC. **We cannot afford to lose one more health and care worker.**

The failure to protect women HCWs is a moral failure and it is also a failure of accountability. Governments have made numerous commitments in global fora to protect HCWs and the Year of Health and Care Workers 2021 is an opportunity to reinforce existing obligations.

Finally, failure to protect women HCWs is a failure to protect ourselves. Women in the health sector want the means - decent work, fair pay, equal leadership, dignity and safety - to do their jobs and deliver stronger health outcomes for everyone.



Source: WHO

Key Findings

1. Inadequate PPE has increased health risks and mental distress for women

- PPE has been critical for the protection of HCWs in the pandemic. Inadequate and absent PPE has exposed all health and care workers to infection but especially women who are the majority of HCWs in patient-facing roles.
- Concerns over PPE have caused women HCWs mental distress, worried that they might catch COVID-19 and infect their families.
- Inadequate PPE has made women HCWs feel 'expendable' and lose trust in their employers. Significant numbers of women HCWs plan to leave the profession.

2. PPE is not fit for women

- PPE used during the pandemic was not designed for and does not fit most women HCWs; only 14% of our survey respondents exclusively used PPE that was fitted to them.
- PPE design does not address diversity among women, their different body and face shapes, and range of head dresses; women from minorities have felt marginalized.
- PPE is not fit for periods, pregnancy, or menopause; women HCWs report intentionally disrupting their menstrual cycles in order to cope at work, while pregnant and menopausal women have faced severe challenges overheating in unsuitable PPE.
- Some PPE coveralls cannot be removed for women to use the toilet without being discarded. When PPE supply in the pandemic was scarce women HCWs have used adult diapers and limited their liquid intake as coping strategies. Women have experienced discomfort and loss of dignity.
- Inappropriate, ill-fitting PPE has impeded women's work and caused pain and suffering; wearing PPE on long shifts has resulted in bruises, rashes and sores.

3. PPE is a gender equity issue

- Compounded by wider gender inequities in the health workforce, many women have not had access to adequate PPE; in our survey, only 25% of women reported having an adequate supply of PPE all the time.
- Women HCWs are clustered into low status jobs and have often been lower priority for PPE than male colleagues; women are marginalized in health leadership and when they speak out concerns are silenced or ignored.
- Women HCWs have considered some workplace policies and practices in the pandemic unsafe, for example around re-use of PPE, but have felt powerless to do anything.
- Women are usually the primary caregiver within the family; their double burden of work and care at home exacerbates their concerns around PPE.
- Women HCWs - paid less on average than men – have had to use their own money to buy PPE, aggravating the issue of low wages or unpaid work, especially in low- and middle-income countries (LMICs).

4. PPE access is an equity issue

- Global inequities in the vaccine roll out between countries has left the most vulnerable women HCWs in LMICs at greatest risk, without the protection of vaccines or adequate PPE.
- Frontline community HCWs at high risk of infection have been deprioritized for PPE because of their low status: in India and Africa women have fought back and made their voices heard.

5. Women on the frontline have had to 'make do'

- Lack of safe, private changing spaces has left women without dignity and at risk of harassment.
- Only 11% of women could use the toilet as often as needed when wearing full PPE; this caused dehydration, urinary

tract infections and creates specific challenges during menstruation.

- PPE being used is not appropriate for working in hot climates and women have suffered, especially during menstruation, pregnancy and menopause.
- HCWs have been forced to re-use PPE designed for single use, causing additional stress.

6. Governments and employers are failing in their duty of care

- Failure by governments to protect health workers by ensuring an adequate supply of PPE has constituted a moral failure and in some countries, a breach of occupational health duty.
- Occupational health policies are not being implemented and women health workers feel they have little recourse.
- Employers of HCWs have failed in their duty of care to protect their employees through supply of adequate PPE.

7. Women HCWs know what they need

- Women HCWs are strongly committed to their profession and want the means to do their jobs safely and with dignity. Safe and effective PPE is therefore critical.
- Women are the majority of health and care workers, they are the experts in the health systems, they deliver the majority of health services and know best what women HCWs need to protect their health and dignity.
- Women HCWs want to be protected and have proposed solutions in this survey for more appropriate PPE, designed by and for women, suitable and comfortable for long shifts, for hot temperatures and that enable women to use the bathroom.



In conclusion,

PPE matters. It matters for safety: HCWs have contracted COVID-19 and died and the pandemic is far from over. Millions of HCWs have had COVID-19 and will suffer longer term health impacts. PPE matters especially where occupational health policies are weak and HCWs remain unvaccinated.

PPE matters to women. PPE not designed for women's bodies has left them at greater risk of infection and working in undignified, uncomfortable and unacceptable conditions in the pandemic. Women's lower status roles and marginalization in leadership within health systems has made many women HCWs a low priority for PPE and less able to seek redress.

Women matter to health systems. Women are the majority of HCWs and in the pandemic have been around 90% of HCWs in patient facing roles. Health systems could not function without women. Women HCWs are leaving the profession because they feel expendable. Improving PPE for women is possible. It will require governments to ensure the right to health for all citizens; employers to fulfil their duty of care and innovation from industry. Our research sheds light on a critical element of gender inequity in health systems; one that must be addressed to fight COVID-19, achieve universal health coverage and strengthen global health security.

Recommendations

1. Governments must meet their commitments to protect HCWs

- Fulfil commitments made to protect HCWs, for example in World Health Assembly Resolutions, by ensuring an adequate supply of PPE and enforcing occupational health law.
- When procuring PPE, ensure that both design and fit are appropriate for the health and care workforce, especially women.

2. Employers must meet their duty of care for HCWs

- Consult women HCWs and procure PPE based on the needs and characteristics of the workforce, especially gender and ethnicity.
- Ensure gender equity in access to PPE across health professions.
- Ensure inclusive choice of PPE sizes available to address preferences and diversity among women HCWs.
- Provide safe, private spaces for women to change in and out of PPE.

3. WHO should strengthen global governance of PPE

- Develop 'essential' standards for gender-responsive PPE for low resource settings that are similar, for example, to the Essential Medicine List.
- Support member states to regulate PPE standards to ensure consistency and quality.
- Include gender responsive PPE indicators in pandemic preparedness monitoring.

4. PPE producers to innovate and address gender inequity in PPE

- Standards bodies and development organizations should implement the actions in the UNECE Gender Responsive Standards Declaration. (See Part 5, Section 1)
- Include women HCWs at the design stage to develop more gender responsive PPE.
- In production, decentralize supply chains to produce more context specific, locally manufactured PPE to improve access for women in LMICs.

5. Enable women health and care workers to lead and deliver change

- Promote gender equity in leadership in the health sector to enable women to influence decisions on the protection of HCWs, including the provision of gender-responsive PPE.
- Engage professional associations, in nursing and midwifery especially, in setting standards for the design of PPE.
- Enable women HCWs to work collectively through trade unions, professional associations, networks and women's movements.



INTRODUCTION

COVID-19 has exposed the deep inequities between and within countries, including gender inequities in the health and care workforce. After nearly two years of intense and stressful work and exposure to infection during the pandemic, coupled with an increased burden of unpaid work at home, many women health and care workers (HCWs) are exhausted and suffering mental trauma. Reports suggest that women from many countries are considering leaving the profession citing low pay, harassment, lack of recognition and lack of protection from COVID-19 as reasons.¹ Estimates from the World Health Organization (WHO) show health worker deaths were between 80,000 and 180,000 from January 2020 to May 2021.²

Personal Protective Equipment (PPE) has become one of the defining issues of the COVID-19 pandemic. Around the world, front line health and care workers (HCWs)ⁱ have struggled to access the right equipment to protect themselves. This report focuses on the challenges women HCWs have faced around access to, fit and design of their PPE, and serves as a compilation of evidence and stories gathered from original research. Our objective is to help industry and policy makers better understand the challenges women HCWs have faced around PPE during COVID-19, in terms of access, fit and design. The data we present shows that PPE manufacturing standards pay too little attention to the needs of women, who make up the majority of the health and care workforce.

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“...And because we are directly exposed to patients without protection, health care professionals suffered: too many doctors passed away, so many nurses... All women health care workers suffered psychologically and physically, and their families also suffered.”

- Nurse, Pakistan

New commitments around gender equity in the health and care workforce, a push towards gender responsive standards, and increased recognition at the World Health Assembly and elsewhere that the protection of HCWs must be prioritized, all provide opportunities. By documenting women’s experiences, we aim to inform these global initiatives, but also to elevate the voices of women HCWs and promote solidarity. Through our research we show how the pandemic has confirmed what many women HCWs already knew: **PPE is not fit for women**. PPE that does not fit women HCWs will not protect them adequately from the health risks they encounter at work. There is no time to waste: **we cannot afford to lose one more health and care worker**.



ⁱ This term includes health service providers as well as other occupational groups in health-related activities

01. WHY PPE IS A GENDER ISSUE

PPE was a gender issue before COVID-19. This report focuses on the health and care workforce during COVID-19, but women have faced challenges wearing PPE designed for men in all sectors. 2017 research by the UK Trades Union Congress confirmed that it is commonplace for companies to procure men's PPE for women but in smaller sizes.³ Wearing equipment designed for men can be fatal: women are 73% more likely than men to be killed in a car accident because crash test dummies are based on male body measurements.⁴

In most countries where COVID-19 infections among HCWs have been reported disaggregated by sex, women were the majority of HCWs infected. At the start of the pandemic, infection cases of COVID-19 among health personnel were significantly higher among women than men (75.5% vs 24.5%) in Spain, with Italy seeing a similar ratio of 69% women to 31% men.⁵

While some of the challenges around PPE (for example, shortages and poor quality) affect HCWs of all genders, we are focusing on women because they make up 70% of the global health workforce, and 90% of nurses.⁶ Therefore, if medical PPE is not fit for women, it is not fit for the majority of the health and care workforce who have been on the frontline of the pandemic.

In addition to shortages faced by HCWs in the pandemic there have been many reports of PPE not designed for women's bodies and physiological functions. Available PPE is often too large for women, and they face specific challenges using full body PPE that has not been designed to meet their needs, especially during menstruation. Current full body PPE is designed so women have to remove it completely to urinate and manage menstruation. Removing full PPE is a major issue in a pandemic where infection control is critical and once removed, it must usually be discarded, compounding PPE shortages and increasing cost. In Wuhan, China the United Nations Population Fund (UNFPA) sent sanitary towels and adult diapers to

frontline HCWs, 90% of whom were women, to enable them to work long shifts with COVID-19 patients without removing their PPE.⁸

Our research finds that although PPE is a universal issue for women HCWs, it does not manifest equally. HCWs in high income countries have generally had access to PPE, while many HCWs in low-income countries still do not. The COVID-19 pandemic has exposed inequalities in health systems both within and between countries. Within all health systems, because of the lower status roles they hold, our data finds women have often been less able to access PPE than their male counterparts. There is also evidence that women from racial and ethnic minorities have been less protected, highlighting the intersectionality of gender inequities in the health and care workforce.⁹ PPE designed for women and minority faces is often seen, and internalized by women, as an unfeasible economic burden for health systems. Women should not have to experience non-male, non-whiteness as their problem and a downside of their job, while believing that there is "little to be done" about the situation.

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“As the pandemic has unfolded, it has become apparent that PPE does not protect all workers equally. This is because – quite often – these specifications are drawn up on the basis of the male body, which all too often is taken as the reference for the human population as a whole.”⁷

02. PPE DURING COVID-19

According to WHO, even when used correctly, PPE alone is insufficient to provide total protection against COVID-19; ideally, PPE should be used only for a short time, as the last part of a comprehensive package of prevention and control measures for occupational hazards in the health sector.¹⁰ However, in the context of COVID-19, heavy workload, patient flows and shortages of PPE have required HCWs to depend on and wear PPE for extended periods of time. Alongside other measures like vaccines and handwashing, medical PPE is therefore a part of the critical defense for HCWs, protecting them from infection and the risk of disease and death in the course of their work. In the absence of universal testing or vaccine access, PPE matters. The commitment to decent working conditions during COVID-19 has been enshrined in Resolution WHA74.14: Protecting, safeguarding and investing in the health and care workforce.¹¹

Studies have estimated that PPE reduces the risk of infection during a pandemic by 60-95%.¹² In one study, none of the 420 doctors and nurses reallocated to frontline work at Wuhan hospitals at the start of 2020 contracted COVID-19.¹³ The staff received training in proper use of PPE before their assignment and were provided with “appropriate PPE,” which included protective suits, isolation gowns, gloves, face shields or goggles, hair covers, boots, and shoe covers as well as N95 respirators or surgical masks (both being used at the same time during aerosol generating procedures). Used with other measures, PPE is also one of the most cost-effective health interventions. The cost-effectiveness of protecting HCWs with PPE in low-income and lower-middle-income countries over a one-year period during the early phase of the COVID-19 pandemic was \$59 per infection averted.¹⁴

Despite this, many countries have not invested adequately in PPE. As mentioned above, access to PPE has not been equitable, varying between and within countries. PPE manufacturing is highly concentrated in a handful of countries; more than 60% of

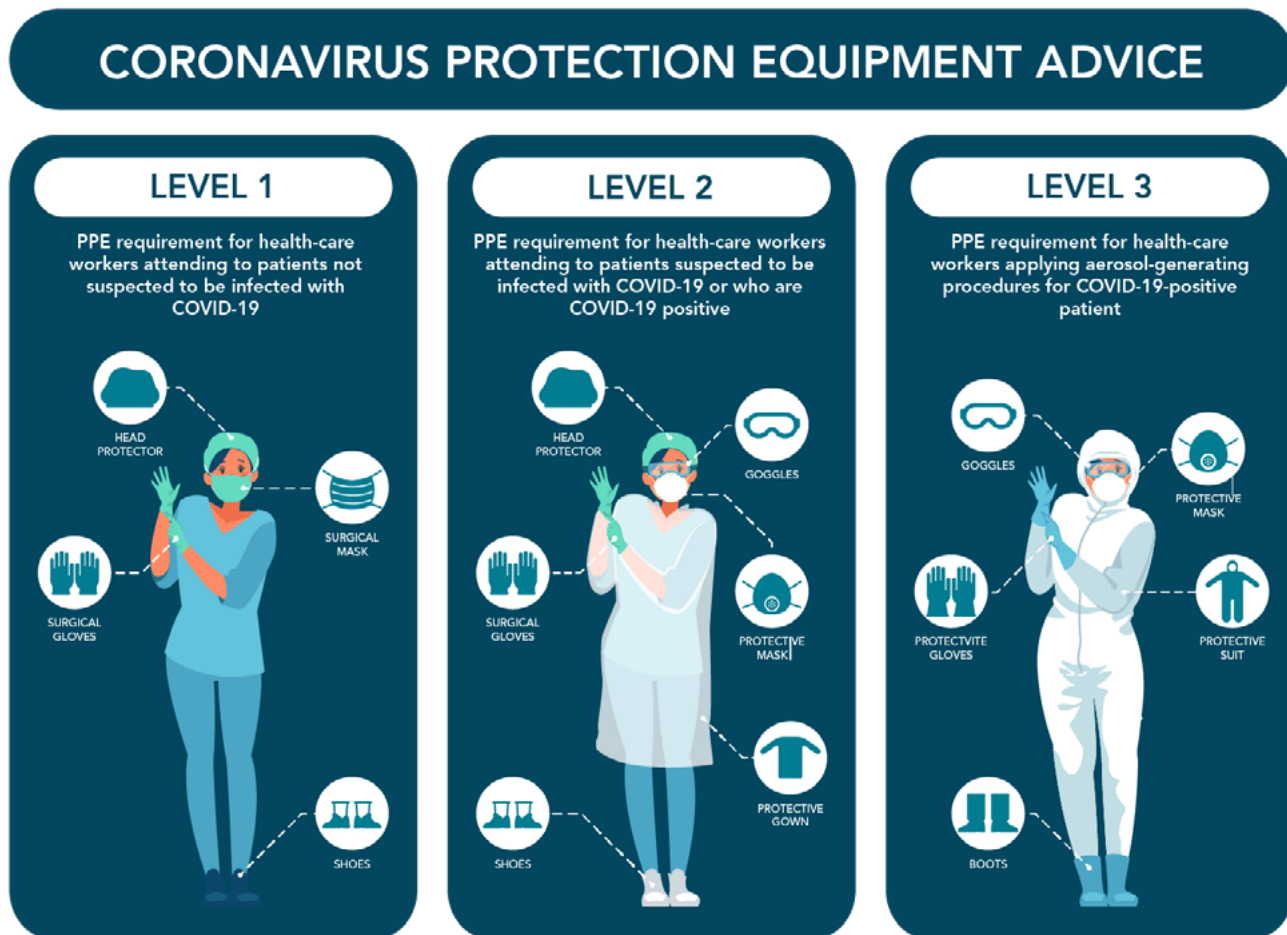
global production is in China and the USA. A combination of widespread supply chain disruptions and a 280% surge in demand in 2020 denied entire populations access to high-quality PPE.¹⁵ In Kenya, fewer than 15% of healthcare facilities reported having access to the PPE they needed.¹⁶ Global Fund assessments in 2020 found many gaps in availability in low-income countries: core PPE like masks and gloves were only available in 38% of facilities surveyed.¹⁷ In Malawi, stockouts of respirators were twice as high in rural facilities as in urban facilities. Lack of PPE means women HCWs in LMICs are now facing compounded risks due to parallel inequity in vaccine access.



The COVID-19 pandemic has revealed entrenched issues in the PPE ecosystem, including acute shortages that induced steep price shocks and gaps in access. Currently, most medical PPE is designed for single use and is disposable, which places pressure on both health systems and the environment.

Market failures which predate the current crisis have resulted in a broken system that is failing all HCWs, but women especially. PPE standards currently vary across regions and create confusion, while testing capacity is often insufficient to ensure standards have been met.

Three levels of protection recommended by WHO in December 2020:



Source: <https://www.freepik.com/vectors/medical>

WHO issues advice but does not set out global standards or policies for PPE use in health facilities. What PPE is actually worn, and its effectiveness on an individual depend on many factors from global market forces to face shape. This report focuses on PPE from the perspective of women HCWs. Other initiatives are underway to address wider issues in the PPE ecosystem, for example you can find more information [here](#).



Source: White Ribbon Alliance

03. PPE IS NOT ALWAYS FIT FOR WOMEN

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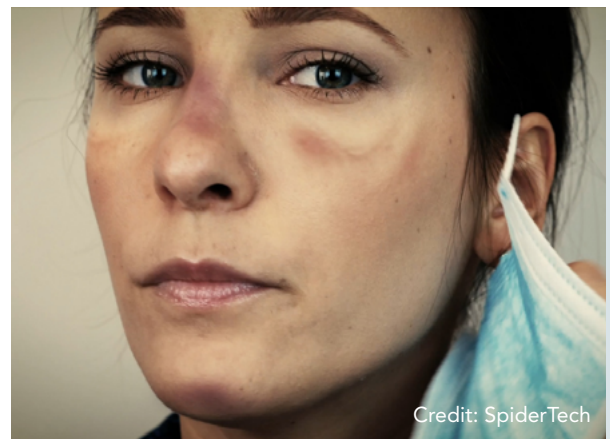
“...In some US hospitals, nurses were wearing garbage bags instead of gowns, and reusing single-use masks many times. They were being forced to stay on the job even if they had fevers.”

- Eve Ensler, 'Disaster patriarchy,' The Guardian

Reports and publications from around the world have documented how medical PPE is not always fit for women, resulting in equipment that fails to adequately protect the majority of HCWs from risk of infection. An international cohort study found female staff who performed tracheal intubation on COVID-19 patients were more likely to be infected¹⁸. However, in general, there has been little research into the gender differences in PPE needs or effectiveness and only a handful of academic studies have been published.

Even in some of the world's best resourced health systems, PPE for women HCWs has been a challenge. In the UK, although 75% of HCWs are women, PPE continues to be designed for “the size and shape of male bodies”¹⁹. An analysis of over 1000 fit tests in one UK hospital revealed that women were almost twice as likely to fail tests than men. The “one-size-fits-all” assumption is especially problematic when HCWs are required to deliver care to patients for up to 12-hour shifts and ill-fitting equipment is uncomfortable and bruises the skin.²⁰ An online survey with UK HCWs in 2020 sought to understand how PPE impacts clinical work, focusing on human factors and ergonomic issues. The theme of “surviving PPE” emerged, with suffering a prevalent experience. HCWs (72% female) indicated that their safety glasses were often too big and surgical masks were ill-fitting causing visual difficulties, injuries, and skin breakdown.²¹ Beyond physical discomfort and exposure to infection, ill-fitting PPE has impacted HCWs' perception of safety in the workplace. Twice as many women doctors did not feel confident that their PPE is fully fit-tested or adjusted to their physical requirements.²²

Another UK survey showed that women HCWs were less likely than men to feel safe carrying out their roles, with only 30% of women and 53% of men stating that they felt safe all of the time. A statistically significant link was made between women suffering more with poor fit than men with major categories of PPE (gowns, masks, visors, goggles). Over four times as many women (55%) as men (13%) reported their surgical gowns being large to some degree and women were nearly twice as likely (54%) to experience oversized surgical masks than men (27%).²³



Credit: SpiderTech

Nurses have indicated that they feel inadequate and unsafe due to their ill-fitting PPE but have felt that even technical standards fall short of outlining necessary components of adequate PPE.²⁴ A nurse working on the pandemic in Hubei Province, China briefed her mainly male supervisors that pads and tampons for women HCWs were essential and was told that she “lacked the spirit of devotion”.²⁵

04. PROTECTING COMMUNITY HCWS

Community Health Workers (CHWs)—trained lay people (mostly women) who provide health services in their communities—are playing a pivotal role in fighting the COVID-19 pandemic and maintaining essential health services, especially in LMICs.²⁶ Professionalized, proactive CHWs are particularly well placed to build on the foundations of trust they have already established, and to communicate and implement new and rapidly evolving community-level response measures. Yet CHWs have been among the most unprotected members of the health and care workforce during the COVID-19 pandemic due to challenges with PPE supply and accessibility.²⁷ Given that CHWs are mostly women, addressing the gender dimensions of the PPE shortage for CHWs is necessary, including provisions for adequate pay and employment protections.

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“Patients’ last hope are CHWs. CHWs are always there and for that reason PPE keeps the confidence.”

- Community health worker, Sierra Leone

In India, Accredited Social Health Activists (ASHAs), a 900,000 strong all-women group of CHWs, have fulfilled a critical role in communities by tracing contacts and promoting public health measures. Despite increased contact with containment zones and possibly infected individuals, at the start of the pandemic, ASHAs were forced to buy their own PPE without government supplies or resources.²⁸ Many went on strike because the Indian government failed to respond to their requests for increased pay and adequate PPE supply: some mentioned receiving only one mask in the span of four months. In response to the ASHAs’ demands for better PPE and pay, a senior Delhi government official stated that the ASHA workers did “not require PPE”.²⁹

In Uganda, CHWs described the biggest challenge of the COVID-19 pandemic as the lack of essential protective materials like masks

and gloves. Many CHWs have only been given hand sanitizer. Lack of PPE has meant CHWs are seen in their communities as high-risk individuals more likely to spread the virus, and this has impeded their other important work like family planning counselling.

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“We know CHWs are a significant pillar of basic public health interventions as we conduct contact tracing and support isolation... Without PPE, however, CHWs can neither stop COVID-19 nor provide health services. Limited PPE has affected my work ..as a community role model, when I fail to maintain standards what will I tell them?”

- Community health worker, Uganda

Without PPE, CHWs risk transmission to family members or other community members during visits, which increases community-wide infection. If CHWs themselves are infected, no public health infrastructure remains in place for contact tracing or testing for the most vulnerable. Yet access to PPE for CHWs has been deprioritized by some countries based on WHO advice to focus PPE provision on HCWs treating critical and severe COVID-19 patients. Fortunately, women like Ramatu have stepped up and helped mobilize PPE for CHWs in Africa.

Photo of Ramatu Jalloh, Heroine of Health and Community Health Worker; mobilized the COVID-19 Action Fund for Africa, that has so far raised nearly \$USD 20 million to provide over 100 million pieces of PPE to hundreds of thousands of frontline HCWs worldwide



05. MAKING PPE FIT FOR WOMEN – THE OPPORTUNITIES

1. GENDER RESPONSIVE STANDARDS

Gender responsive standards are developed with consideration of how gender impacts the content, requirements, and application of standards. They ensure that the needs, experiences, and concerns of all genders are an integral dimension in the design and performance of the product, process, or service undergoing standardization.

Standards are often referred to as “invisible infrastructure”, they touch all aspects of our lives, from the products, processes, and services we use daily. PPE, like all products, is produced in compliance with standards, which take the form of technical guidelines developed by committees convened under the umbrella of standards organizations. Historically, standards have not been gender responsive, with default reference group data and testing panels being male. While comprehensive data is scarce, it is generally recognized that women are under-represented in standards development; in 2020, only 7% of technical committee chairs at the International Electrotechnical Commission were women.³⁰



To help address this, the UNECE (UN Economic Commission for Europe) launched a “Gender-responsive Standards Declaration”.³¹ This initiative aims to strengthen the use of standards and technical regulations as powerful tools to attain Sustainable Development Goal 5 (Achieve Gender Equality and Empower all Women and Girls), integrate a gender lens in the development of both standards and technical regulations, and elaborate on gender indicators and criteria that could be used in standards development. The main areas for action outlined in the Declaration include:

1: *Working towards gender balanced / representative and inclusive standards development environments.* For example, by striving for equal representation of women on committees, and by collecting sex-disaggregated data on participants in standards development to compare with employment statistics.

2: *Creating gender responsive standards.* For example, by developing a network of gender experts to support standards development committees, and by developing tools to conduct gender-based analysis of all standards in any form of active development.

3: *Creating gender responsive standards bodies.* For example, by promoting women’s leadership, creating gender action plans and collecting data on the gender ratio of employees at all levels.

There is an opportunity to support these initiatives in improving the standard development process, to ensure women are at the table and their expertise and perspectives are at the core of standards.

2. FOSTERING INNOVATION IN PPE

There is a great need – and opportunity – for innovation to make PPE fit for all women in the health and care workforce. As well as a lack of gender responsive standards, PPE is not designed for the diversity of climates women HCWs face. Nor is it designed for the range of diverse roles women HCWs undertake outside of clinical settings, for example as community health workers.

Furthermore, the growing use of and demand for PPE has exacerbated the already significant global waste management challenge as the majority of PPE products are designed for single use. During the pandemic PPE is being used by an additional estimated 5 billion people.³² Disposable masks alone generate 1.6 million tons of plastic waste per day.³³

Our research found many examples of women innovating solutions to shortages in supplies and improvising to make PPE fit better. There is an opportunity to elevate voices from our

“

“Today, there is no systemic approach for catalyzing PPE innovation that meets HCW needs, and approaches to improving wearability, fit and environmental impact are still rudimentary. Most PPE products are designed for single-use, leading to enormous waste with no potential for circularity.”³⁴

research, and to share their innovations with global health and industry leaders. There is also the potential to foster new innovation, supporting women designers and entrepreneurs to redesign PPE to be more fit for women and healthy for the planet.”

The ideal PPE for women?

In response to risk of infection for women from ill-fitting PPE in emergency rooms, the VeraSuit has been designed with women HCWs in mind. Rigorous testing with women of different sizes, shapes and ethnicities, from different cultural contexts, was undertaken to ensure fit and protection. The result is a suit that is fit for both infectious disease control, and the great diversity among women HCWs. The VeraSuit is being deployed on the front lines of the COVID-19 pandemic in parts of Asia. However, at \$60/per suit this cost is prohibitive for most LMIC health systems. Furthermore, according to WHO, coveralls, double layering of gowns, shoe protection, or hoods that cover the head and neck such as those used in the context of filovirus disease outbreaks (e.g. Ebola virus), are not required when caring for patients with COVID-19. The VeraSuit shows that there is the market demand for innovation in PPE. The challenge now is to incentivize innovation, create demand and supply of better PPE in markets where cost is a barrier.

VeraSuit™ The Best Protection for Health Care Workers

- Contiguous Facial Protection** defends the mouth, nose, and eyes from aerosol generating procedures
- Patient Friendly:** the large face shield enables better communication with patients
- Air movement in the internal volume minimizes **lens fogging**
- Compliant spacers** create an internal air volume that keeps a wearer cool
- Two Color Doffing** indicates which surfaces were exposed and which were not
- Integrated 95% Filter** (on back)
- Frontal Hemisphere Priority** minimizes zippers, seams, or gaps in primary exposure areas
- Taped seams**
- Barrier protection** selectable from PB70 Level 2 or 3 (current) up to PB70 Level 4 (upon demand)
- Simple Doffing**, like removing a long sweater
- No second person** required for doffing
- Doffing Handwear** avoids handling soiled gloves during doffing
- Gown is Single Use**
- Separates Fit & Filtration** N95s require fit testing. Facial hair, shape, etc ruin their seal. The gown overcomes these problems
- Less Maintenance** reusable hardware remains under the gown during usage

All at a price comparable to quality surgical gowns.
Great design goes a long way. www.verasuit.com

Source: <https://www.verasuit.com/>

ii Women in Global Health is preparing to launch a ‘Fit for Women’ PPE design challenge in 2022

3. WOMEN'S LEADERSHIP

Although women comprise almost 70% of the global health workforce, participation in the decision-making process and access to power has remained a pervasive challenge. In the health sector, women hold only an estimated 25% of senior roles.³⁵ This pattern has been repeated in decision-making during the COVID-19 pandemic.³⁶ Health systems will be stronger when the women who deliver health and care have an equal say in the design of national health plans, policies and system, including those that influence PPE. There is a growing body of evidence that women parliamentarians, when present in sufficient numbers, change the political agenda and prioritize health.³⁷ In January 2020 only 12 out of 193 countries (6%) had a female head

of government, nevertheless, one study in July 2020 found female-led countries had fewer COVID-19 deaths per capita, a shorter number of days with confirmed deaths, a lower peak in daily deaths per capita, and a lower excess mortality; the study concluded that female leaders had acted quickly, implementing measures of lockdown early on as recommended by national health experts.³⁸

In the UK (see below), the Women's Equality Party and former Plaid Cymru leader Leanne Wood from Wales questioned the Welsh government on provision of PPE to fit men and women. The response was that PPE is not gender specific.³⁹

What assessment has the Welsh Government made of whether there is adequate personal protective equipment (PPE) designed to fit the range of (a) female and (b) male sizes; and what steps are being taken to ensure that all workers who require PPE have equipment that fits them properly?

Answered by Minister for Health and Social Services | Answered on 05/06/2020

NHS Shared Services is responsible for central procurement of PPE and this equipment is universal and not gender specific. PPE also doesn't generally come in a range of sizes, however, where there is a choice, every effort is made to procure an appropriate range.

In the case of PPE, women's leadership in procurement, for example, could help address some of the supply and fit issues raised in this report. There is an opportunity to promote gender transformative leadership around PPE, to elevate and work with women leaders in both health and political spheres and, ultimately, to ensure all HCWs have access to appropriate PPE.

“

“We need a market evolution led by women.”

- PPE expert



Source: Business online

Strengthening women's leadership in the PPE industry

The [Women's Leadership in Private Healthcare Global Working Group](#), created by the [IFC Women's Employment Program](#), aims to strengthen women's leadership roles in the healthcare sector. The working group brings together Chief Executive Officers and Human Resources managers from 17 leading health care organizations in Africa, the Middle East, and South Asia to identify and address gender barriers in their field..

As part of this initiative, IFC has coordinated knowledge-sharing webinars on gender inclusion topics and peer-to-peer sessions on integrating Gender-Smart Business Solutions for health care companies. In addition, all members committed to implementing at least two strategies for advancing gender equity in their organization. The commitments range from prioritizing increased female representation in management to creating mentoring programs and offering flexible working hours to employees.

The working group is implemented in partnership with the Government of Norway and under the umbrella of the IFC Global Health Platform (GHP), which promotes private sector solutions in developing countries to respond to the challenges of COVID-19.



4. MAKING PPE FIT FOR WOMEN – THE IMPERATIVE



“Health and care workers have protected the world during COVID-19: We have a moral obligation to protect them.”

- WHO

The failure to protect women HCWs is a moral failure⁴⁰, but it is also a failure of accountability. Governments and employers have a duty of care to protect HCWs. The benefits of protecting HCWs include reduced risk of occupational injuries, diseases and fatalities, improved quality of care and patient safety, increased HCWs’ morale, increased productivity, and reduction of the direct and indirect costs associated with occupational injuries and diseases. For governments, the protection of HCWs is enshrined in World Health Assembly resolutions, where commitments have been made.

For employers, there is a duty of care to protect HCWs in occupational health legislation. However, occupational health is often under resourced and accountability mechanisms lack enforcement. During PPE shortages at the start of the pandemic, the United States Centre for Disease Control (CDC) lowered standards for PPE, while the agency that could have contested this, the Occupational Safety and Health Administration, was criticized for being absent.⁴²

According to the WHO and ILO’s COVID-19 occupational health and safety guidance for health workers: *“Employers have the overall responsibility to ensure that all necessary preventive and protective measures are taken to minimize occupational risks to health workers”*; the same guidance also states that *“Health workers should continue to enjoy their right to decent, healthy and safe working conditions in the context of COVID-19”*.⁴³ Without adequate PPE and other protective measures, HCWs cannot enjoy their rights. Instead, the right to a decent, healthy and safe working environment is being grossly violated, causing many HCWs to die, become ill, demoralized and leave the sector (see box below). There is an urgent imperative to rethink the protection of women HCWs during COVID-19, especially for those in countries where vaccine access is limited.

World Health Assembly Resolution WHA74.14. *Protecting, safeguarding and investing in the health and care workforce* calls upon Member States *“to take the necessary steps to safeguard and protect health and care workers at all levels, through the equitable distribution of personal protective equipment, therapeutics, vaccines and other health services, effective infection prevention control and occupational safety and health measures within a safe and enabling work environment that is free from racial and all other forms of discrimination.”*⁴¹

UN General Assembly Resolution. 75/156 (2020) *Strengthening National and International Rapid Response to the Impact of the Coronavirus Disease (COVID-19) on Women and Girls* calls for *“...providing appropriate personal protective equipment, including essential hygiene and sanitation items”*.

The Great Resignation

The COVID-19 Effect – a global snapshot:⁴⁴

Japan

Japanese Nursing Association reported **15%** of hospitals across Japan had nurses resigning from their jobs, and approximately **20%** of nurses reported that they had experienced discrimination or prejudice amid the spread of the first wave of the pandemic.

USA

American Nurses Association reported **51%** were overwhelmed. Other reports from US showed **93%** of healthcare workers were experiencing stress, **76%** reported exhaustion and burnout, and nurse-to-patient ratios increased three-fold.

Brazil

49% of nurses reported anxiety and **25%** reported depression.

China

60% of nurses reported exhaustion and **90%** reported anxiety.

Africa

A survey conducted in 13 countries in Africa revealed **20%** of healthcare workers surveyed reported daily depression symptoms during the pandemic, compared to **2%** prior to the pandemic.

Spain

80% of nurses reported symptoms of anxiety and increased burnout.

Israel

reported over **40%** of nurses feared caring for the sick and COVID-19 patients.

Australia

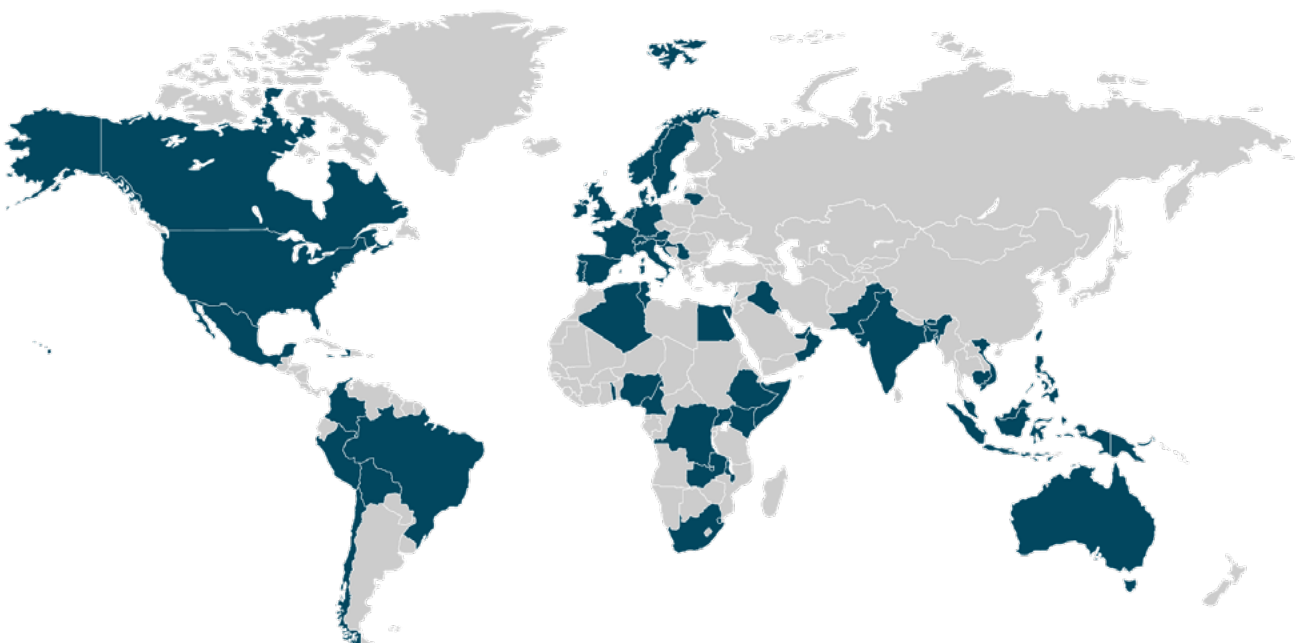
61% of healthcare workers reported burnout and **28%** reported depression.

06. RESEARCH FINDINGS

The findings below are a result of several months research during 2021 which focused on an online survey in English, Spanish, and French. The survey data was complemented by interviews with HCWs recruited through the survey and Women in Global Health (WGH) networks. Quotes used are taken from both the survey open text answers and interviews. The full methodology and survey tool can be found in the separate methodology Annex (available from www.womeningh.org).

Although we were able to gather data from over 50 countries in all regions (see graphic below), we acknowledge a selection bias in the respondents. The survey was published in English, French and Spanish, making it challenging for women HCWs in parts of East Asia and the Arabic speaking world to participate. Furthermore, the online survey tool allowed us to potentially reach a large proportion of HCWs, but not those (for example, CHWs) lacking internet access or literacy skills.

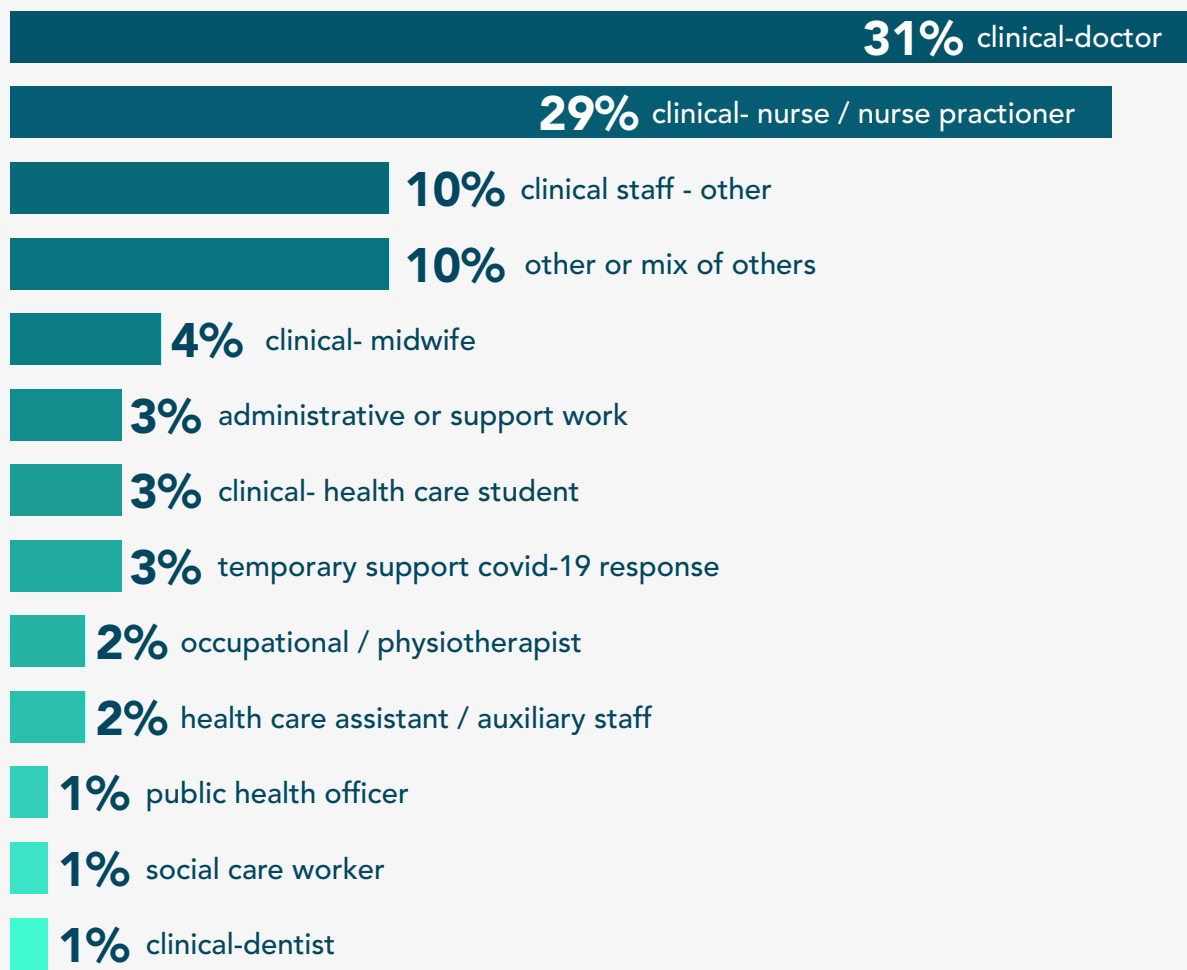
Figure 2: Survey respondents came from 59 countries



List of Countries

Algeria	Egypt	Malawi	Somalia
Australia	Eswatini	Malaysia	South Africa
Austria	Ethiopia	Malta	Spain
Bangladesh	France	Mexico	Sweden
Bhutan	Germany	Netherlands	Switzerland
Bolivia	Haiti	Nigeria	Taiwan
Brazil	India	Norway	Togo
Cambodia	Indonesia	Oman	Tunisia
Cameroon	Iraq	Pakistan	Uganda
Canada	Ireland	Papua New Guinea	United Arab Emirates
Chile	Italy	Peru	United Kingdom
Colombia	Jamaica	Philippines	United States
Croatia	Kenya	Portugal	Vietnam
DRC	Lebanon	Serbia	Zambia
Denmark	Lithuania	Slovenia	

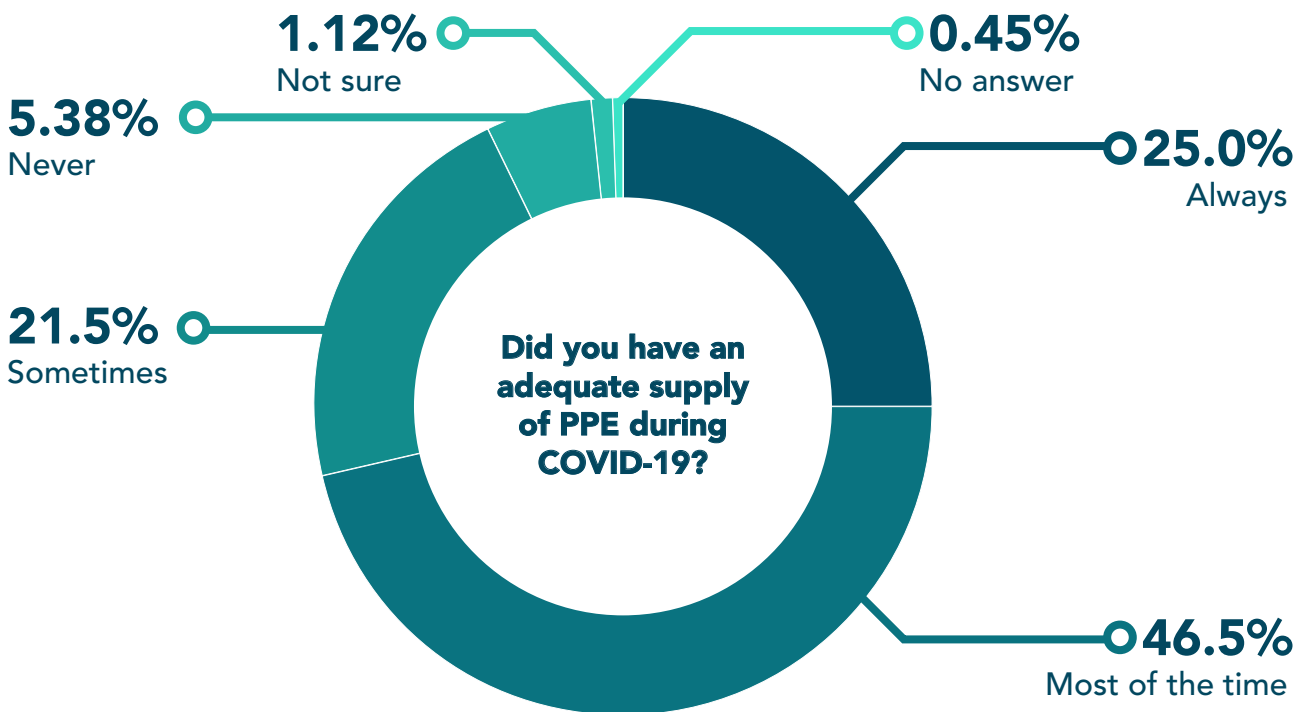
Survey respondents - breakdown of roles



1. ACCESS TO PPE

Challenges accessing PPE have been universal. Our data revealed issues under several different dimensions of access, including: availability (limited supply of PPE); acceptability (inappropriate design of PPE); affordability (PPE too expensive for HCWs to buy); quality (poor quality, especially an issue when HCWs were forced to re-use PPE); and accessibility (affected by gender inequities in health workforce). In our survey, **only 25% of women reported having an adequate supply of PPE all the time** (see pie chart below). There was often a great discrepancy reported between what PPE

women felt they needed to be safe, compared to what they received in reality. In terms of availability, major shortages at the start of the pandemic compounded HCWs' fear and anxiety of working in the midst of a new virus: *"In the first wave of Covid, we were advised that there was not enough PPE available. We were not provided with masks and encouraged to wash hands only instead of using hand sanitizer. We were not allowed to use scrubs provided by hospital due to shortage of this as well and had to purchase our own"* (Doctor, UK).



On the front lines, women have experienced limited supply of essential items including masks, eye protection, gloves, and gowns. Although respondents reported the situation has generally improved, inconsistency is a key trend with HCWs at the mercy of supply chains, and poor decision making:

“

*“There was **poor planning, neglected supply chain management, corruption and inadequate prioritization...**a lot of the times the people that are in charge of these decisions are not necessarily clinically based, and they don’t have the clinical insight and knowledge to understand the real impact of what they are currently deciding.”*

- Doctor, South Africa

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*“Because we have **limited supply of PPE,** I don’t have a choice and there are issues.”*

- Nurse, Papua New Guinea

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*“The supplies are **always on and off.**”*

- Midwife, Uganda

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*“It’s either **PPEs are unavailable or if available of poor quality and don’t meet the standard.**”*

- Doctor, Kenya

There has been little transparency regarding procurement and allocation policies, with lack of accountability a cross-cutting theme. There were also reports of PPE being restricted by management and “discouraged by senior staff when available but in short supply”.

“

*“It didn’t ever really feel like there was much accountability for the equipment that we were being given. **All the safety checks that we do in healthcare to minimize harm were just thrown out the window.** We really just had to trust that the PPE was up to standard. When they started shipping stuff from Asia, which would have labels that were indecipherable to most of us, you just had to rely on the fact that somebody had made this decision to keep you safe. So that autonomy was taken from you. You didn’t have another option.”*

- Doctor, Australia



Gaps in training and guidelines

Our data revealed gaps around PPE training and guidelines too. Although over 80% of respondents said guidelines were available, only 57% considered the guidelines adequate. Similarly, while the majority of respondents (83%) had been provided training on PPE use for COVID-19, only 36% felt 'very confident' using it and **65% of women HCWs surveyed would like, or might like, more training**. There were also many examples of poor management practice around PPE, and women HCWs had concerns about the efficacy of instructions and policies: *"At times we were given one disposable FFP3 mask for a full 12-hour shift in a covered covid bay. After a couple of hours the mask was so wet with expired moisture that it was poorly fitted and offered little protection. I feel that we should also be changing surgical face masks more often, rather than using them for 12 hours"* (Nurse, UK).

Lack of access to PPE has left many HCWs feeling at risk of COVID-19. HCWs have felt at risk due to possible infection, not only for themselves, but for their patients and families as well: *"Not having enough PPE during shifts is a threat to me, the patient, and my family"* (Nurse, Zambia).

Due to gender inequalities in the burden of care, women HCWs are usually primary caretakers of children and family as well: *"There's definitely a gender aspect to it – women are not only healthcare workers but also caregivers, so lack of PPE translates into anxiety when they go home too"* (Doctor, South Africa). Weaving through the data is a very real fear of contracting and/or transmitting COVID-19 as these respondents from South America describe:



"Ma préoccupation c'est que je réalise que je deviens une source principale de la propagation de la maladie."

My concern is that I am becoming a main source of the spread of the disease.



"Lo que más me preocupaba era mi familia, no podía permitirme aislarme y tenía que volver a casa después de cada turno."

I was concerned the most, for my family, I could not afford to isolate myself and had to go back home after every shift.

Heightened stress and fear, as well as perceived lack of workplace safety, have negatively impacted HCWs' ability to care for patients. Some women even tried to avoid patients or skip work completely: *"Initially there was a limited supply available such that there was a strong disincentive to seeing patients face to face because you might use all the PPE and leave other colleagues exposed"* (Family doctor, UK).

Without access to or supply of appropriate PPE, many have had to 'make do' with inadequate

PPE, which falls far below basic standards: *"I look for alternatives, such as using dishwashing gloves, shower caps, and I got a military mask from a flea market"* (Nurse, Mexico). In Germany there were reports of nurses having to use masks with "not for medical use" written on them, and one doctor described how it was "difficult to get PPE because FFP2 Masks are often locked away/hidden by other staff due to theft". Similarly, in Canada, one nurse reported how PPE was kept in locked areas that are not accessible to staff, and concerningly: *"our masks were expired, and dates crossed off"*.

Even when available, PPE access is mediated by gender power imbalances. Women make up the majority of HCWs, especially nurses and CHWs who are less likely to be afforded adequately protective PPE when shortages occur. In terms

of accessibility, the hierarchy between HCW cadres has played out in the scramble for PPE. In the vast majority of contexts, this is a hierarchy with women at the bottom.

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“There definitely is a hierarchy: ICU doctors are well protected but the healthcare workers in the general ward often have very little PPE—they don’t really have face shields, for example—but they still attend to COVID patients and are exposed to infection.”

- Doctor, South Africa

“

“Nurses are in the majority, but when it comes to us, we were getting a lot less... this was the barrier to delivering appropriate care.”

- Nurse, Zambia

“

“When I worked in the COVID isolation ward I did not have disposable gowns and disposable masks. If these things came, only a few doctors or consultants got them. But when it comes to us, the nurses who are the majority, we got much less. This lack of PPE created a barrier between the care we could give and delivering appropriate care to our patients.”

- Nurse, Pakistan

Access and supply chain challenges have only exacerbated existing gender inequity in health systems by consolidating decision-making power in the hands of male ‘managers’, reinforcing the necessity for women’s leadership

in the health sector. When they spoke out, women have not been listened to and risked being labelled as difficult, as this testimony from a community psychologist in Malawi makes clear:

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*“...Mostly, it’s the men who are at the top. And so, they’re the first priority. When you try to speak out about how you need certain things, it’s just it’s not taken seriously. And then they still expect you to do the work. There was a time where I really didn’t want to keep on going and doing field visits and home visits without having the right gear. **But when I voiced this concern, I ended up getting labelled as stubborn.** At the end of the day, I was just trying to make sure that I am being safe, and I am being protected. ...There are two females in the department, and it’s always the two of us who end up being the ones that are sent out to the field because we’re women, and we can ‘relate with people better’. So that’s the excuse that they end up giving. But we’re not getting adequate protection. **And the men end up staying behind in their safe space.** The [gender] dynamics have been playing out, where women are expected to do the dirty work, but without getting any protection. I have seen this trend in different departments, and am hearing it from female friends in different fields - nurses, pharmacists, physiotherapists – and when we complain about being sent out into the field without proper protection, we get labelled as being stubborn.”*

Most (90%) women have some PPE provided by employer or local authority; however, in response to inadequate supplies and access challenges, many HCWs have been forced to buy their own. In the UK: "A lot of us paid for our own equipment, like special protective goggles that fit our face better than the plastic goggles that we were given." In the case of the health worker from Malawi (see above testimonial), she had to rely on a friend in a pharmacy selling to her at wholesale price because: "It's simply not affordable, considering also how much HCWs get paid in Malawi...nurses are the bottom tier, so they don't get paid that much." In our survey, only 25% of respondents could afford to buy PPE if they needed to. Women HCWs are not well paid but many chose or were forced to spend their modest salaries on PPE.



"PPE is not provided by institute, initially we were providing it, but this added significant financial burden due to long pandemic period and long and frequent duties."

"I have to provide my own PPE and it's difficult to get gowns and N95 masks on my current salary."

"I have to buy out of pocket."

*"El gasto en EPP lo tengo que hacer a fuerza, por mi seguridad, aunque tenga que ajustarse en otros gastos."
I must invest in PPE for my safety, although I have to forego other expenses.*

"The PPE often needed to be sourced privately even though it was required to come in person to work."

2. RE-USING PPE AND 'MAKING DO'

Re-use of PPE designed for single use was also a universal experience across all contexts and roles. **50% of survey respondents had had to re-use PPE more than they felt they should.** This figure would likely have been much higher if we had conducted the survey in 2020. All kinds of PPE was re-used, due not only to global and national shortages, but in many cases because of policies that prioritized money over safety. Women HCWs who were forced to purchase their own PPE adopted re-use as a strategy to reduce expenditure, even if they knew this was not safe.

Many women did not feel the procedures around re-use were adequate. In Kenya, for example, there were *"no clear guidelines on how to reuse them"* (Paramedic) and women HCWs were concerned about effectiveness after re-use. Similarly in Uganda: *"Because of shortage, we're forced to reuse which is risky for us"* (Midwife). In Germany: *"FFP2 masks were to be worn all day at a certain time, although it has been proven that they are only secure up to a couple of hours"* (Doctor). Re-use of masks was especially problematic in hotter climates: *"Re-use of N95 masks is difficult as it gets damp soon, especially in my country"* (Doctor, India).

Some HCWs received training on how to re-use safely, such as spraying PPE with alcohol to sanitize and decontaminate. Despite this, re-use was not ideal, and many respondents shared similar concerns to this nurse from the USA: *"We have been re-using N95 masks for the majority of the pandemic. The cleaning and storing processes are not streamlined and have added complication to an already overwhelming workflow."* We also heard reports of unsafe practice around re-use, for example: *"We use a dental tool UV sterilizer to sterilize masks in between days of use. We were told it was not approved and couldn't be used, so it's hidden in an office."* (Doctor, USA).

Women surveyed reported how face shields that were wiped and sanitized for reuse made it more difficult to see during procedures. Critically, re-use often worsened fit: bands loosened, and items stretched: *"A lot of the masks don't fit after wearing them for a while"* (Doctor, UK). Re-using PPE designed for single use exposed the poor quality of products: Gowns tore easily and *"goggles are inadequate since cheap single use articles are used for weeks"* (Doctor, Germany). However, as with other PPE challenges, women *"made do"* and were forced to re-use even when not safe or appropriate.



"PPE kits are expected to be reused defeating the whole point."

"Many times throughout the pandemic, I was given used, "sanitized" N95s that had been worn either previously by myself or previously by others. I did not see this as appropriate."

*"In the worst of the early surge in the UK we had to **re-use paper gowns**. We had to be confident in their ability to protect us after washing. We were not confident. **We also re-used visors which became difficult to see through and posed a risk of eye strain and technical slips with practical procedures.**"*

"I have used the same N95 mask for months. I only wear it when working with people I know have COVID 19."

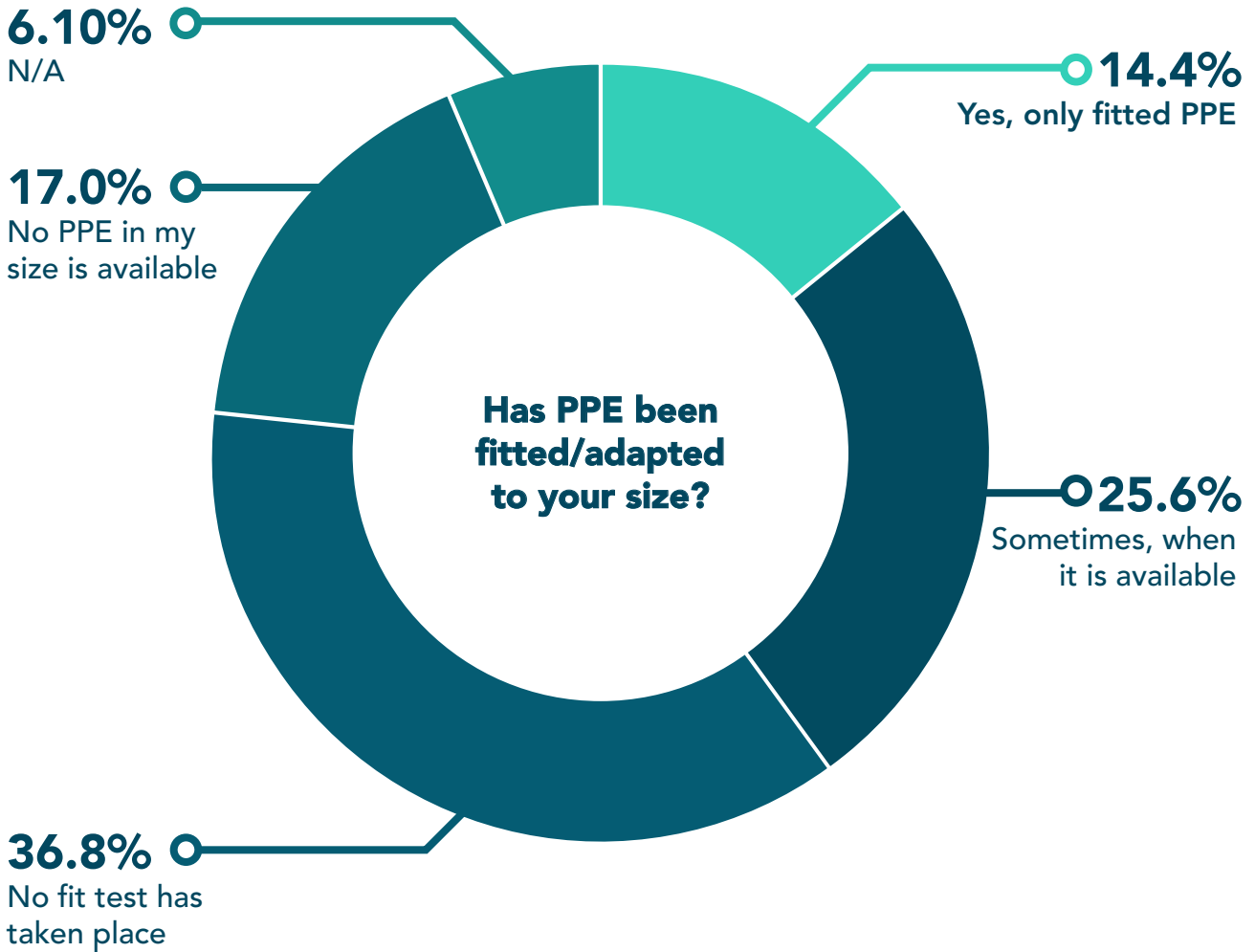
"The hospital supplied industrial type face shields with hard plastic and no padding, causing headaches and skull pain. They forced us to wear these for 6 months because they could be wiped."

Experiencing the active breakdown of PPE following repeated usage, in addition to instruction from management and administration to continue unsafe practices, led to the heightened feeling of having to "make do" at the expense of safety, ultimately contributing to loss of morale.



3. ONE SIZE DOES NOT FIT ALL

If PPE does not fit well, it does not protect. However, **only 14% of our respondents exclusively used fitted PPEⁱⁱⁱ** and many related challenges were reported. Fit tests are used in health facilities to help ensure critical items of PPE fit correctly, for example to see if respirators are sealed correctly. Despite their usefulness, fit tests are far from universal, even in high income countries.



ⁱⁱⁱ In our survey we asked women: 'Has PPE been fitted/adapted to your size?'

A common thread was that **PPE of all types is too big for women.**

"Most masks don't fit - they're not designed for women's faces; gowns are always too large - occasionally dangerous as they catch on things or trip you up; visors are too large - difficult to perform procedures while wearing."

"Me and my female colleagues had problems with those big masks. Also, the gowns were way too big, sometimes I even slipped on them because they were so long, I couldn't walk properly. The goggles always slid down the nose, so sometimes out of reflex, I pushed them up when my gloves were already possibly contaminated."

"We were getting the standard XL size which does not fit our stature. The gowns were too big and this was also a barrier to delivering care to our patients."

"Ill-fitting PPE posed a health and safety risk...Enormous gowns meant that you were either tripping over them or couldn't move properly."

"Normal masks are too big for me, but my employer buys only these."

Ill-fitting masks are particularly problematic given the transmission of COVID-19, but the situation where masks do not fit women well has almost been accepted as the status quo. For example, in the UK, one of the few contexts where fit tests are routine, we heard how women HCWs were failed by a process that is meant to help: "Multiple masks not fitting. Tester tried to say it would probably be fine despite clear signs of mask shifting on face then coming off during test. Apparently 'a lot of women fail this one'". HCWs from non-Caucasian populations faced additional challenges with fit due to diverse face shapes but were also expected to accept the status quo and work without adequate protection.



"...everybody lost their mind about all the men having to shave their hair to fit the seal. And I was like, well, that's actually a modifiable issue there, isn't it? Like you can shave your facial hair. None of these women can change the shape of their face."

"I have been told by the mask fit testers that most south and southeast Asian female staff have failed mask fit tests due to our smaller than average (?? Which average?!) faces."

"Masks were not available that provided a seal on my (female, ethnic minority) face. I refused to work in ICU without appropriate mask but was made to feel like this was a silly personal choice".

"I have found when mask-fitting that many women of non-European descent like myself have smaller/flatter nose bridges, which meant that even if the mask fit around the chin/jaw sometimes it could not be pinched down well around the nose. Similarly, non-European women were less likely to have good fit around the jaw because our faces are often more petite."

Ill-fitting masks not only fail to protect women but also cause suffering: "The masks were so badly fitting, the sores they left were painful" was a common experience.

“

"I double loop the ear loops to obtain a closer fit but the gaps remain and the twisting of the ear loop hurts my ears. The twisted ear loops mean my glasses do not sit properly and this also causes vision problems, headaches and leads to more adjustment of PPE."

“

"Pressure sores occurred within about 2-3 hours of continuous use due to having to tighten straps to avoid mask leaks."

“

“The mask has given me pressure sores on my nose, I now apply a protective dressing to my nose every day before donning my mask. I have had frequent headaches and UTIs from not drinking enough water, and my jaw now clicks, swells and hurts which is has never done before. The straps of the mask also have plastic fasteners that get tangled in long hair (you can tell it was designed by a man!) that has broken and ripped chunks of my hair so I now wear a fabric hat and strap my mask on the outside of the hat.”

Although some women improvised solutions to help masks fit better, these were not ideal in terms of comfort or infection control: *“For surgical masks I have to twist the straps otherwise the mask practically falls off! However, this causes it to flare out at the sides so not sure how good that is at infection control”* (Doctor, UK). Adjustments such as fixing gowns with paper clips or duct tape and tying back masks also became impediments to their work and didn’t necessarily ensure protection: *“I am cautious and tend to be slow in performing my work as I have to re-adjust the PPE”* (Clinical worker, South Africa).

Significant numbers of women reported that gowns were ill-fitting and women struggled with oversized garments that made even walking difficult; women also felt clumsy, unprofessional, and their dignity was compromised: *“The gowns are so big that I am tripping on the hem and the neckline gapes open”* (Nurse, Canada).

“

“I am a senior manager. When I’m in PPE I look like I’m playing dress-up in my mum’s clothes.”

Midwives have faced specific challenges with oversized PPE: *“As a student midwife the sleeves of the PPE were far too long to safely deliver babies. We were expected to wear this long sleeved PPE even for water births which did not protect us as all as it just filled up with water and made it very uncomfortable- we would have been safer not wearing them at all!”*. Gloves were also routinely only available in larger sizes, making simple tasks challenging: *“Wearing larger gloves can hinder my work, for example handling medications or giving injections. Sometimes I opt not to wear gloves, which can increase the risk of contracting or spreading diseases”*.

If women HCWs are constantly in discomfort and readjusting their PPE, they cannot work effectively. With sliding goggles, ill-fitting masks, and large gowns, women HCWs risk impaired sight, increased risk of infection, and limited movement with fear of tripping and knocking down supplies or accidental contact with infected surfaces. Despite the evident

challenges, or the fact that women fail their fit tests for PPE, no recourse exists and HCWs may even be made to ‘feel silly’ for being concerned about ill-fitting PPE. Ill-fitting PPE also added to women HCWs’ anxiety about catching and transmitting COVID-19.



*"As the mask does not fit, I am **anxious** about the **much greater risk** of catching and transmitting the virus."*

*"**Ill-fitting PPE** puts me at risk as well as my family if I ever get the virus at work."*

"I'm really scared that I'll get COVID-19 because of the ill fitting mask. I'm scared to visit relatives and friends."

"I have not felt safe throughout the pandemic due to PPE and its lack of fit."



Source: JHPIEGO

4. DESIGN

PPE does not always fit women because it is not designed for women. The design for most PPE was based historically on the body size and shape of average men from Europe and America or, in the US specifically, based on data from the 1950–1960s.⁴⁵ Asking women about PPE design exposed multiple complaints:



“Not size or shape to fit women’s bodies, eg to cover bust has to be bigger size for some staff, for others to fit hips far to big at waist. No pockets in scrub trousers. Light colors shows up sweat. Masks limited face size. Not suitable for staff with shoulder problems/disability as need two hands to put on FFP3 masks. Visors are long and cause rubbing/ masking on skin. Powered hoods helpful option but no speaker so difficult to hear.”

- Nurse, UK

As outlined in the above section, masks do not fit the size and shape of women’s diverse faces and this increases infection risk, as well as causing discomfort, sores and pain. As well as the related to poor fit, complaints included: *“My face is now always cut”* and *“I have face rash from wearing FFP2”*.

Poor quality in design standards was widely reported. Women felt PPE was not made to last for multiple use or last for the duration of a 12-hour shift, and there are many reports of gowns made out of cheap material (nylon) which is “too thin”, often tearing when it was put on.

“It keeps you from performing to the best of your abilities” was a common sentiment. Communication with patients is impeded by the design of facial PPE: *“using a respirator mask makes communication challenging and colleagues and patients often cannot hear me”*. Poor vision can also be stressful and disruptive, but this was a universal experience for the many HCWs who wear glasses because PPE has clearly not been designed with glasses users in mind:



“I can’t wear my glasses with surgical mask as no matter how tight the nose band is my glasses steam up. I therefore have a headache every shift.”



“Mental fatigue and stress is a factor. Wearing glasses and then face shields can affect vision and can be very disorientating.”



“I hate the face shield - using multifocal glasses plus face shield plus fogging makes it difficult to set lines & do procedures. I can’t adjust my glasses.”

PPE has not been designed to address women’s features and variability in body shape. Gowns may be dangerously long but also too narrow, not designed to accommodate hips or cleavage, hazmat suits do not accommodate breasts, and masks cannot be worn with many hair styles /head dresses. Unisex PPE not only fits many women poorly but also presents other safety and dignity concerns around exposing cleavage:

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*“All you had to do was look around the emergency department on any given day and realize that something wasn’t working quite right. **Women were walking around holding up their scrubs. I had to buy new scrubs because the generic neckline was far too low to work properly.** I can’t bend over and do anything. With higher necklines, at least, I’m finding that patients aren’t able to look down my top. My female colleagues will tell me that they always sew something into their scrubs, or always wear a t-shirt underneath, too, and male colleagues are always surprised.”*

- Doctor, UK

While, in general, the trend was for PPE to be too big, the message that “Women are not small men” came out repeatedly. Non gender responsive PPE design meant that gowns and suits could be too tight, and so could not be done up, especially for women with “hourglass” figures: “As African women we struggle with PPE fit a lot because of our hourglass shape”

On top of the fact that poorly fitting PPE does not provide protection, women have faced humiliation and loss of dignity due to design issues: “...once you put it on and for example, your leg stays open, then every everyone looks around you and think oh, she’s too fat for it, but she’s not too fat for it. It’s just not made for her body type.”

Women generally have more head hair than men, but this is not taken into account in PPE design. Nor is the great variability in hair and head dress styles: “With longer hair, it’s harder for goggles and masks to stay on because they can slide off, but of course all of the instructions to put masks on are depictions of men.”

“

“PPE did not always come in sizes appropriate for my Afro hair.”

Similarly, as they manage poor fit, women have improvised to overcome design issues, for example: “The straps of the mask also have plastic fasteners that get tangled in long hair (you can tell it was designed by a man!) that has broken and ripped chunks of my hair so I now wear a fabric hat and strap my mask on the outside of the hat.”

Crucially, PPE has not been designed for working in hot temperatures. This is a particular problem in Africa and Asia, where HCWs are less likely to have had access to the vaccine, or air conditioning. Women HCWs experienced discomfort, dehydration, and even fainting due to overheating: “Overheating when hormonal caused hot flushes and I nearly fainted.” Although overheating was a particular challenge in full body PPE, dehydration was also common among other HCWs as wearing masks made it harder to take drink water as needed during shifts.



"I have fainted at work several times due to how hot it is wearing the PPE."

"I live in India where it's extremely humid which fogs the goggles and dampens the masks thus hampering their productivity."

"As a home visit provider in non air-conditioned homes when temperatures are over 90 degrees, it came become dangerously hot to wear PPE."

"I can't deal with it, it becomes too hot. And there's no venting, there's no aeration."

"El traje con overol es altamente incómodo y los googles se empañan, uno se deshidrata y tiene mala visión para procedimientos."

The suit is highly uncomfortable and the goggles fog up, one becomes dehydrated and has poor vision.

In Pakistan, the heat caused misery for nurses battling the pandemic, as described in this nurse's testimonial:

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"In Pakistan we have hot, very hot weather, temperatures above 45 degrees, and in our hospital there is no ventilation. I was working on the first floor, which is directly exposed to the sun: you feel like someone is throwing fire on you. When we were wearing PPE in this heat, believe me, it was not possible to breathe: we were not able to drink water, we were not able to go to the washroom, our lips and tongue were literally dry. It was a horrible situation. We were sweating like you can't imagine. In the evening, we were coming back from work ill, dehydrated and many became ill....One of my fellow nurses was working in the COVID isolation ward when she was seven months pregnant - you can't imagine how much she suffered. She fainted during her shift due to dehydration and heat stroke."

Dehydration was a widely reported issue, not only in hot climates. PPE is hot and sweaty in all contexts, and suffering was compounded by the design of suits that prevents toilet use. This experience is highlighted in our survey data, which shows **only 11% of women could use the toilet as often as needed when wearing full PPE.**

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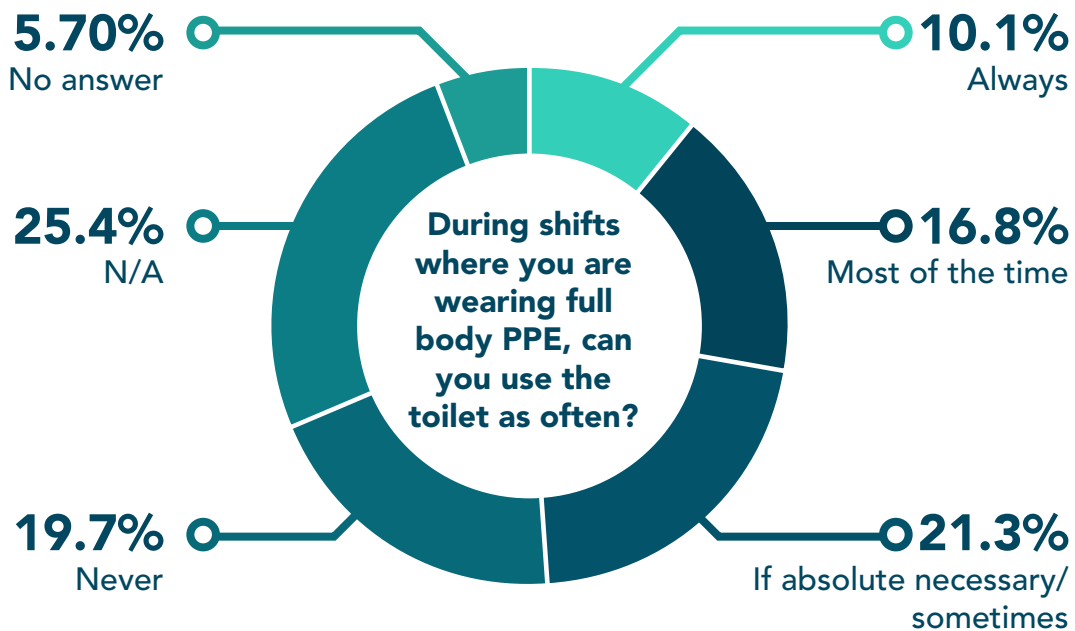
“We use the PPE the full day for about eight hours, which you can imagine also imposes its own risks. Because once you get to that point, you start not going to the bathroom, you ignore your lunch breaks, because to put on PPE and put off, to take off PPE is such a big thing.”

- Doctor, South Africa

“

“As for the full body gown, it is a big challenge because of the design. You have to wait until the end of shift to have a change of sanitary wear.”

- Health Worker, Zambia



As described in the quotes above, overheating and dehydration in unsuitable PPE are even more problematic during menstruation and pregnancy.



PPE is not fit for periods

“

“I would dread duty hours during menstruation.”

- Doctor, US

Working long shifts with PPE during menstruation was a particular challenge for women having to wear full body PPE, causing stress, anxiety and ‘embarrassing moments’: *“White Coveralls... I mean it must have been a man who developed it! Your anxiety levels rise sky high when menstruating and wearing Coveralls. So scared for an embarrassing moment.”*

“

“PPE is not adequate for women’s menstrual cycle.”

- Healthcare assistant, Eswatini

“

“Many times I bled through.”

- Nurse, Slovenia

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“If they get stained, you don’t get another one for the day.”

- Nurse, Uganda

“

“Es incomodo no poder ir al baño y cuando estas menstruando peor el calor es insoportable y desespera no poder ver al empañarse el equipo.”

It is uncomfortable not being able to go to the bathroom and when you are menstruating, the heat is unbearable and you despair not being able to see when the equipment is fogged.”

Many women HCWs are going through menopause⁴⁶ and are especially affected by the issue of hormonal overheating:

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“Perimenopausal heavy periods have soaked during wearing PPE and had to change afterwards very embarrassing.”

“

*“I’m menopausal and get incredibly sweaty and dehydrated - **unable to use face shield when performing procedures** as it fogs up after about 10 minutes and needs changing or removing.”*

“

“Menopause is rubbish even before being encased in plastic.”

“

*“As a postmenopausal woman, wearing PPE is **challenging**. Hot flushes, sweats, dry mouth. (Why has this stage of a woman’s life been overlooked? Lots of nurses are 50 plus)”*

The issue of almost 90% of women HCWs unable to access the bathroom when needed is compounded during menstruation:



"I had to double up pads and tampons, as it was never clear when I would get to take off PPE and use the bathroom."



"Worst ever. You may never have a chance to change until the shift is over."



"Very difficult to change out, I have had to advice women to just wear a diaper over menstrual pad"



"The need to change multiple times a day make me feel so uncomfortable to use complete PPE during my menstruation."



"Oh boy this is the hardest time! Mostly it's ensuring a double pad and double panties."

As a consequence of wearing pads too long, women suffered with rashes, sores, 'boils' and infections: **"Many women I know have had urinary tract infections".**

For some women, coping strategies included avoiding work during menstruation: *"I changed shifts with coworkers to have the first and second day of menstruation off"*. Of concern, women reported taking the pill, or those that were already taking it, took it nonstop to skip periods, knowingly putting their reproductive health at risk: *"I started taking the contraceptive pill to prevent menstruation and would limit my water intake when on breaks to avoid being caught short. Twice I had to use the patient bathroom in the bay I was working in with the door open so I could see the patients as I was so desperate, but would never want to have to change a tampon or empty a mooncup whilst wearing contaminated PPE, so I took the pill instead"*. (Nurse, UK)

The design challenges are linked to supply and re-use issues too, with women not being to go to the toilet and change pads: *"because you can only use a specified amount per day"*.



"During menstruation, it can be especially uncomfortable because you're putting on PPE for extremely long shifts. If you're taking it off, you're taking it off for good. With the risks of contamination and the shortage of PPE supply, you really have to think twice about taking it off. When I was working night shifts, I knew that there was a chance that I would not get more PPE again if I decided to go to the bathroom during my shift."

- Nurse, Zambia

"Periods do not stop for pandemics, we have a responsibility to ensure that they do not hamper the efforts of HCWs, caregivers, or anyone that is experiencing physical, psychological, or emotional challenges during this pandemic." – Pandemic Period Collective⁴⁷

Should menstrual products be part of PPE for HCWs?

Period poverty affects women, girls and people who menstruate all over the world. Access to sanitary products, safe, hygienic spaces in which to use them, and the right to manage menstruation without shame or stigma, is essential for anyone who menstruates. Research conducted by Plan International highlighted that increased costs of period products, supply shortages, and reduced household incomes, meant that women and girls were unable to manage their periods appropriately. Their survey found 73% of health professionals in 30 countries had restricted access to products. Including menstrual products in PPE requirements for HCWs would help reduce period poverty for women HCWs.⁴⁸

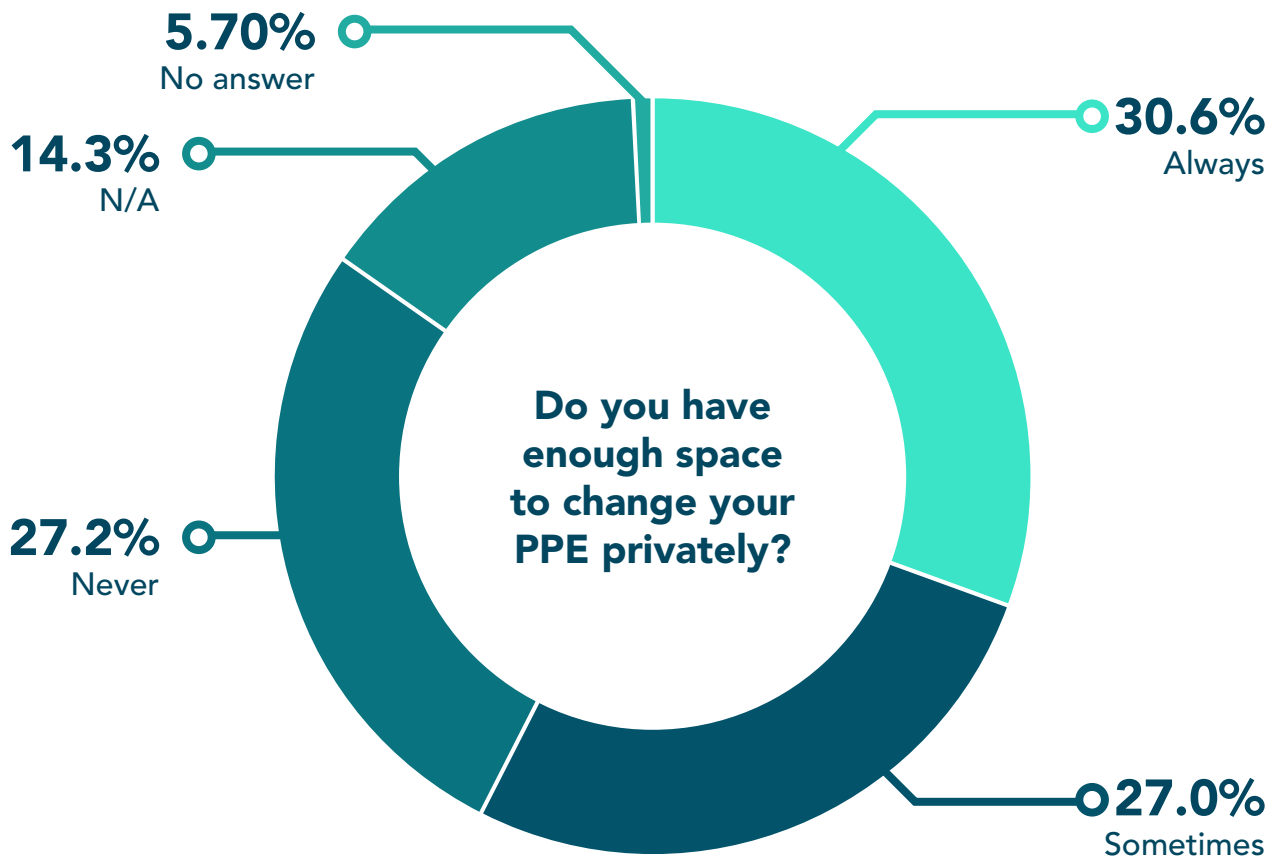
However, emerging from the stories of struggle around menstruation is solidarity amongst women. For example, women in South Africa swapped shifts to cover periods: *“One of my colleagues was on her period for that week. And so she asked me if I will be willing to dress up and physically look at the patients while she will stand outside the room, in her normal clothes and make the notes for me. And so you know, we try to accommodate each other as women to support each other in ways like that. And some of the sisters also did the same way”*.



Photo credit: Nicole Hubbard, CRNA

5. NOT ENOUGH SAFE SPACES

Compounding lack of protection from inadequate PPE, many women also faced challenges protecting their dignity when putting on and taking off PPE. Again, this is a universal issue, from the UK's National Health Service (NHS) to India women report being literally exposed while changing, and even harassed at work. Sexual harassment at work is a major problem for women HCWs but is rarely recorded or sanctioned.^{iv}



^{iv} International Labor Organization (ILO) Convention No. 190 came into force in 2021 and will be significant in encouraging governments to address violence and sexual harassment of all workers, including the health and social care sectors.

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“Patients can see us changing through a glass wall. Sometimes they whistle and bother us.”

“

“You’re in the hallway.... I’ve had numerous comments from patients... And while I’m transgender, the younger women get it worse.”

In most health systems, it is standard practice for women to use communal spaces to change their PPE, despite obvious concerns from women who feel uncomfortable changing in front of men. It is rare for there to be designated private spaces for women to change in, and many reports of women HCWs having to change in front of patients and/or male colleagues – in hallways, common rooms or even in cupboards. Women have felt unsafe, sometimes receiving upsetting comments from patients. Community outreach workers have reported feeling unsafe having to change in the street outside people’s homes. There are also privacy concerns around CCTV in hospitals.

Beyond privacy, lack of safety standards for putting on and taking off PPE in a safe, sterile place increases risk of transmission. Changing in toilets is common practice but this is far from ideal and poses risks around infection control. The alternative to changing at work is to wear contaminated PPE home, which raises safety concerns, including concerns around infecting family.

When women HCWs have asked for safe changing spaces, their concerns have not always been listened to, or have been openly rejected: *“Employers have adamantly refused to give female nurses rooms of their own”* (Nurse, Uganda). Worse, women have been told it would be a ‘waste of space’:

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“I am the only female interventional cardiologist in my institute as well as almost in my country, yet, I am not provided a room nor an accommodation nor a safe place to change in my hospital which is a male dominant hospital nor having a special safe space for changing in the lab....(if the hospital provides you with a room then it is considered a waste of spaces as you are the only female!) This is their response. Being a female cardiologist with such lack of support is very painful.”

- Cardiologist, India



6. I JUST “MAKE DO”

A recurring theme across all the data was that women, on the front lines, are risking their lives, “**just making do**”, as these words from our survey highlight:

You have to make do with stuff that is available

I just wore it because there was no other choice

I just have to put up with it

I just had to “deal with it”

It’s unbearable, but I have no choice

You didn’t have another option

One has to endure

Women HCWs had to make do with ill-fitting PPE, for example:

“

*“I failed a fit test ... **I had no choice** but to use the mask that hadn’t worked properly for my face shape.”*

“

*“Very large gowns - **no way around it**, just have to walk around looking very oversized”*

But making do and coping with less than acceptable situations, has had many negative impacts on women HCWs. From pressure sores from masks to urinary tract infections (UTIs) from not being able to go to the toilet, women have had to “suffer the consequences”, believing “I won’t get any considerations”. The coping strategies women employed to manage shortages and ill-fitting PPE ranged from relatively harmless ideas like “I use Band-Aids on my face to prevent scarring from pressure points from the mask”, to disrupting reproductive health: “You skip your period for that month so that you can perform your duties but that puts your menstrual cycle and your hormonal balance out of sync, and then you start to compromise your own health to fit into your scenario, and to make the best of it at your own expense.”



IDEAS FROM THE FRONT LINE

As well as documenting challenges, we asked women how they wanted to see PPE improved. Hundreds of responses revealed the depth and diversity of challenges – and solutions.

Their asks are not unreasonable but reflect the current status quo where PPE is clearly not always fit for women. Women want their health to be protected and have many good ideas on how to do this, in summary: more supply, of more appropriate PPE options, which are designed by and with women, suitable and comfortable for long shifts, especially in hot temperatures.

Other common suggestions of what women want include:

- A consistent supply of a variety of PPE sizes
- Consistency in standards
- PPE that fits and is fitted
- PPE that does not cause pain
- PPE that does not jeopardize dignity
- Period friendly PPE
- Climate suitable PPE
- Exertion suitable and breathable PPE
- Adjustable PPE (e.g. for during pregnancy)
- Environmentally friendly PPE
- Inclusive PPE design that takes into account the diversity of women's faces, hair styles and bodies shapes
- Innovative PPE design that incorporates religious or cultural considerations, such as wearing headscarves
- Women HCWs' participation in PPE design, procurement and guideline development.

Below we share some specific recommendations – in their own words - from women HCWs for PPE manufacturers.

General suggestions

- They should make an appropriate size for women as standard
- Standardize production - ensure that a small size is identical from all suppliers
- Quality material - not cheap paper or other materials that irritate the skin
- Make PPE adjustable
- Make sure PPE is not hard on the skin or cause skin irritation
- Different size choices and made for comfort since PPE is worn for many hours
- Having male and female specific ranges, and a range of sizes within that
- Rendre disponible des EPI adaptés à notre taille ainsi que des EPI adaptés au climat. Make available PPE adapted to our size as well as PPE adapted to the climate

Allowing for diversity

- Consider diversity such as long hair, and different face shapes
- For women who have hair coverings/ larger hair styles, different head protection is needed
- Design that allows for headwear including Muslim headscarves and hijab
- Indian women wear sarees, so village level HCWs had problems using coveralls
- Des robes et masque à longue fermeture portable au dessus du hijab. Dresses and masks with long wearable closure above the hijab

More environmentally friendly

- Made out of recyclable materials
- Biodegradable
- Extended use PPE

Design PPE for women's needs

- Use female bodies as a basis for designing PPE
- Percent of females involved in design process should be proportionate to percentage of females who actually use the PPE, especially for masks.
- Joint collaboration with women on design of PPE
- Base sizes on the size of women
- Use women as models for the fit rather than downsizing men's PPE.
- Scrubs should be designed to fit female bodies by default
- PPE conducive to going to the washroom without having to remove all of it

Masks that fit and are comfortable

- Masks as a minimum must be designed for women as well as men
- Study female face shapes and make PPE to fit those shapes.
- More research into fit testing masks on women's faces
- Bigger selection of smaller masks
- Separate line of masks for women
- Design face masks that do not steam up glasses
- Face masks that do not gape at the sides ie form an effective shield
- Hypoallergenic N95 masks
- Ideally transparent HCWs can work with mentally unwell patients and clear communication is key
- Make masks with a small "sponge" at the nose area for more comfort

More appropriate for women's bodies

- Take into consideration the different life cycle events such as pregnancy
- Two piece to enable easier removal
- Gowns with higher necklines to provide proper coverage.
- Less hooks and folds so you don't get caught on things as you move around

- A design where women can easily go to the washroom without having to use a diaper
- Scrubs in a women's fit so that trousers have hips and women do not accidentally show their cleavage at work
- Take into account that women have breasts
- PPE that can accommodate underwear, particularly bras
- Gowns with Velcro so they can be taken off and put on again more easily
- Under arm vents
- Lined with cotton material on the inside to absorb sweat, or even menstrual leakages

PPE for hot climates

- Not so sweaty - (gowns) are totally plastic not comfortable for exertion
- More suitable design for women experiencing hot flashes and warmer climates
- Heat exhaustion needs to be considered. PPE is very hot and staff dehydration and fatigue is common from wearing PPE
- Easier to use as hot weather can cause women to faint and vomit

Health system recommendations

- The problems women face have multiple solutions: employing more staff to ensure women have time for e.g. toilet usage, better/more available menstrual products, openness and transparency about women's health issues e.g. periods
- Put money into procuring PPE for women HCWs since they are the majority
- Women are the majority of PPE users so women should be represented on decision making panels, to advise on gendered considerations

CONCLUSION

Our research confirms anecdotal evidence that PPE is not fit for women HCWs. Current medical PPE is not designed, procured, or allocated based on the needs of the people, mainly women, using it. Women HCWs should not have to choose between safety and employment; they should not have to 'make do' with poor PPE that treats them as 'little men'. One size does not fit all and women from all ethnicities should be able to access well-fitting PPE. Innovation is required to address universal challenges such as overheating, as well as gender specific issues, for example around menstruation where we found 'PPE is not fit for periods' and women are suffering. Women HCWs work across a huge range of contexts and are diverse in shape, size, and needs. Decentralization of both design processes and supply chains could help to address inequities and ensure all women HCWs, including those in lower status roles can access well-fitting appropriate PPE.

The recommendations in this report are not meant to stand alone. Improving PPE for women HCWs is part of a bigger project to transform the entire PPE ecosystem, which involves reshaping demand as well as supply. We hope that our findings will translate into increased demand in health systems for more

gender responsive PPE, which will in turn incentivize manufacturers to increase supply. However, health systems are not yet gender equal environments; efforts to improve PPE for women HCWs are part of wider goals to protect and enable women in the health sector to lead and deliver change. Women are the majority of HCWs and in the pandemic have been around 90% of HCWs in patient facing roles. Health systems could not function without women yet they are leaving the profession because they feel expendable.

Our research proves that PPE matters to women. PPE not designed for women's bodies has left them at greater risk of infection and working in undignified, uncomfortable and unacceptable conditions in the pandemic. PPE matters especially where occupational health policies are weak and HCWs remain unvaccinated. Improving PPE for women is possible. It will require governments to ensure the right to health for all citizens, employers to fulfil their duty of care and innovation from industry. Our research sheds light on a critical element of gender inequity in health systems; one that must be addressed to fight COVID-19, achieve universal health coverage and global health security. Failure to protect women HCWs is a failure to protect ourselves.



REFERENCES

- 1** International Council of Nurses COVID-19 Update 13 January 2021.
<https://www.icn.ch/sites/default/files/inline-files/ICN%20COVID19%20update%20report%20FINAL.pdf>
- 2** World Health Organization (2021) The impact of COVID-19 on health and care workers: a closer look at deaths.
<https://apps.who.int/iris/handle/10665/345300>. License: CC BY-NC-SA 3.0 IGO
- 3** TUC (2017) Personal Protective Equipment and Women.
<https://www.tuc.org.uk/research-analysis/reports/personal-protective-equipment-and-women>
- 4** Forman J, Poplin G, Shaw C, McMurry T, Schmidt K, Ash J et al. (2019) Automobile injury trends in the contemporary fleet: Belted occupants in frontal collisions. *Traffic Injury Prevention*. 2019;20(6):607-612.
<https://pubmed.ncbi.nlm.nih.gov/31283362/>
- 5** UNWomen (2020) Op-ed: Personal Protective Equipment standards must respond to women's needs to ensure the safety of all frontline workers during the COVID-19 pandemic. <https://eca.unwomen.org/en/news/stories/2020/5/op-ed-personal-protective-equipment-standards-must-respond-to-womens-needs>
- 6** Boniol M, Mclsaac M, Xu L, Wuliji T, Diallo K, Campbell J. (2019) Gender equity in the health workforce: analysis of 104 countries. Geneva: World Health Organization; 2019 <https://apps.who.int/iris/handle/10665/311314>
- 7** UNFPA (2020) UNFPA delivers medical equipment, personal protective equipment (PPE) and sanitary items to Hubei in support of the national response to the coronavirus outbreak. <https://china.unfpa.org/en/news/20022401>
- 8** World Health Organization (2021) COVID-19: occupational health and safety for health workers: interim guidance, 2 February 2021. <https://apps.who.int/iris/handle/10665/339151>. License: CC BY-NC-SA 3.0 IGO
- 9** Wenham C, Fernandez M, Corrêa M, Lotta G, Schall B, Rocha M et al. (2021) Gender and Race on the Frontline: Experiences of Health Workers in Brazil during the COVID-19 Pandemic. *Social Politics: International Studies in Gender, State & Society*. <https://academic.oup.com/sp/advance-article/doi/10.1093/sp/jxab031/6369592>
- 10** Seventy-fourth World Health Assembly, Geneva, 24 May-01 June 2021. Resolution WHA74.14 Protecting, safeguarding and investing in the health and care workforce.
https://apps.who.int/gb/ebwha/pdf_files/WHA74/A74_R14-en.pdf
- 11** Kim H, Hegde S, LaFiura C, Raghavan M, Sun N, Cheng S et al. (2021) Access to personal protective equipment in exposed healthcare workers and COVID-19 illness, severity, symptoms and duration: a population-based case-control study in six countries. *BMJ Global Health* 2021;6(1):e004611. <https://gh.bmj.com/content/6/1/e004611>
- 12** Janson D, Clift B, Dhokia V. (2021) PPE fit of healthcare workers during the COVID-19 pandemic. *Applied Ergonomics*. 2021;99:103610. <https://pubmed.ncbi.nlm.nih.gov/34740070/>
- 13** Risko N, Werner K, Offorjebe O, Vecino-Ortiz A, Wallis L, Razzak J. (2015) Cost-effectiveness and return on investment of protecting health workers in low- and middle-income countries during the COVID-19 pandemic. *PLOS ONE*. 2020;15(10):e0240503. <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0240503>
- 14** IFC, FCDO (2021) Covid-19 – PPE demand & supply perspectives.
https://www.ifc.org/wps/wcm/connect/1d32e536-76cc-4023-9430-1333d6b92cc6/210402_FCDO_GlobalPPE_Final+report_v14updated_gja.pdf?MOD=AJPERES&CVID=nyjUnTU
- 15** Global Fund (2021) Transforming the medical PPE ecosystem
https://www.theglobalfund.org/media/11243/publication_ppe-synthesis_paper_en.pdf
- 16** World Health Organization (December 2020): Rapid phone survey with frontline service facility managers of 121 facilities in Kenya
- 17** Global Fund (2021) Transforming the medical PPE ecosystem.
<https://associationofanaesthetists-publications.onlinelibrary.wiley.com/doi/10.1111/anae.15170>
- 18** El-Boghdady K, Wong D, Owen R, Neuman M, Pocock S, Carlisle J et al. (2020) Risks to healthcare workers following tracheal intubation of patients with COVID-19: a prospective international multicentre cohort study. *Anaesthesia*. 2020;75(11):1437-1447. <https://associationofanaesthetists-publications.onlinelibrary.wiley.com/doi/10.1111/anae.15170>
- 19** The Independent (2021) Female NHS staff at risk due to not being able to 'access protective gear correctly sized for

- women'. <https://www.independent.co.uk/news/uk/home-news/coronavirus-ppe-women-wrong-size-doctors-nurses-uk-cases-a9476766.html>
- 20 Ascott A, Crowest P, de Sausmarez E, Khan M, Chakladar A. (2021) Respiratory personal protective equipment for healthcare workers: impact of sex differences on respirator fit test results. *British Journal of Anaesthesia*. 2021;126(1):e48-e49.
- 21 Hignett S, Welsh R, Banerjee J. Human factors issues of working in personal protective equipment during the COVID-19 pandemic (2020) *Anaesthesia*. 2020;76(1):134-135. <https://associationofanaesthetists-publications.onlinelibrary.wiley.com/doi/10.1111/anae.15198>
- 22 Hignett S, Welsh R, Banerjee J. Human factors issues of working in personal protective equipment during the COVID-19 pandemic (2020) *Anaesthesia*. 2020;76(1):134-135. <https://associationofanaesthetists-publications.onlinelibrary.wiley.com/doi/10.1111/anae.15198>
- 23 Janson D, Clift B, Dhokia V. (2021) PPE fit of healthcare workers during the COVID-19 pandemic. *Applied Ergonomics*. 2021;99:103610. <https://pubmed.ncbi.nlm.nih.gov/34740070/>
- 24 Nursing Standard (2020) COVID-19: nurses say they are not getting adequate PPE. <https://rcni.com/nursing-standard/newsroom/analysis/covid-19-nurses-say-they-are-not-getting-adequate-ppe-159881>
- 25 The New York Times (2020) Shaved heads, adult diapers: Life as a nurse in the Coronavirus outbreak <https://www.nytimes.com/2020/02/26/business/coronavirus-china-nurse-menstruation.html>
- 26 Ballard M, Bancroft E, Nesbit J, Johnson A, Holeman I, Foth J et al. (2020) Prioritising the role of community health workers in the COVID-19 response. *BMJ Global Health* 2020;5:e002550. <https://gh.bmj.com/content/5/6/e002550>
- 27 Center For Global Development (2021) Protecting Community Health Workers: PPE Needs and Recommendations for Policy Action. <https://www.cgdev.org/publication/protecting-community-health-workers-ppe-needs-and-recommendations-policy-action>
- 28 Bloomberg news (2020) India's army of 600,000 virus hunting women goes on strike <https://www.bloomberg.com/news/articles/2020-08-06/india-s-army-of-600-000-virus-hunting-women-goes-on-strike>
- 29 Bloomberg news (2020) India's army of 600,000 virus hunting women goes on strike <https://www.bloomberg.com/news/articles/2020-08-06/india-s-army-of-600-000-virus-hunting-women-goes-on-strike>
- 30 Heß P. (2020) SDG 5 and the Gender Gap in Standardization: Empirical Evidence From Germany. *Sustainability*. 2020;12(20):8699. <https://www.mdpi.com/2071-1050/12/20/8699/htm>
- 31 UNECE (2019) Declaration for Gender Responsive Standards and Standards Development. https://unece.org/DAM/trade/wp6/AreasOfWork/GenderInitiative/UNECEGenderDeclaration_English.pdf
- 32 IFC (2021) Innovation in PPE Manufacturing: Towards Circularity & Sustainability. https://www.ifc.org/wps/wcm/connect/industry_ext_content/ifc_external_corporate_site/manufacturing/resources/innovation+in+manufacturing+personal+protective+equipment
- 33 Benson N, Basse D, Palanisami T. COVID pollution: impact of COVID-19 pandemic on global plastic waste footprint. *Heliyon*. 2021;7(2):e06343. <https://www.sciencedirect.com/science/article/pii/S2405844021004485>
- 34 IFC (2021) Innovation in PPE Manufacturing: Towards Circularity & Sustainability. https://www.ifc.org/wps/wcm/connect/industry_ext_content/ifc_external_corporate_site/manufacturing/resources/innovation+in+manufacturing+personal+protective+equipment
- 35 World Health Organization (2019) Delivered by women, led by men: A gender and equity analysis of the global health and social workforce. Geneva: World Health Organization (Human Resources for Health Observer Series No. 24).
- 36 Van Daalen K, Bajnoczki C, Chowdhury M, Dada S, Khorsand P, Socha A et al. (2021) Symptoms of a broken system: the gender gaps in COVID-19 decision-making. *BMJ commentary*. <https://gh.bmj.com/content/5/10/e003549>
- 37 Asiedu, E. et al (2018) Effect Of Women's Representation In Parliament And The Passing Of Gender Sensitive Policies. <https://www.aeaweb.org/conference/2018/preliminary/paper/an5yEb5h>
- 38 Coscieme L, Fioramonti L, Mortensen L, Pickett K, Kubiszewski I, Lovins H et al. (2020) Women in power: Female leadership and public health outcomes during the COVID-19 pandemic. <https://www.medrxiv.org/content/10.1101/2020.07.13.20152397v2>
- 39 Welsh Parliament, The Record. <https://record.senedd.wales/WrittenQuestion/80238>

- 40 Hines S, Chin K, Glick D, Wickwire E. (2021) Trends in Moral Injury, Distress, and Resilience Factors among Healthcare Workers at the Beginning of the COVID-19 Pandemic. *International Journal of Environmental Research and Public Health*. 2021;18(2):488. <https://www.mdpi.com/1660-4601/18/2/488/htm>
- 41 Seventy-fourth World Health Assembly, Geneva, 24 May-01 June 2021. Resolution WHA74.14 Protecting, safeguarding and investing in the health and care workforce. https://apps.who.int/gb/ebwha/pdf_files/WHA74/A74_R14-en.pdf
- 42 Personal communication with PPE expert
- 43 World Health Organization (2020) COVID-19: Occupational health and safety for health workers. Interim guidance. https://hlh.who.int/docs/librariesprovider4/hlh-documents/covid-19---occupational-health-and-safety-for-health-workers.pdf?sfvrsn=581e60c6_5
- 44 International Council of Nurses COVID-19 Update 13 January 2021. <https://www.icn.ch/sites/default/files/inline-files/ICN%20COVID19%20update%20report%20FINAL.pdf>
- 45 Janson D, Clift B, Dhokia V. (2021) PPE fit of healthcare workers during the COVID-19 pandemic. *Applied Ergonomics*. 2021;99:103610. <https://pubmed.ncbi.nlm.nih.gov/34740070/>
- 46 According to the US National Nursing Workforce Survey, the average age of surveyed registered nurses was 51 years. <https://www.ncsbn.org/workforce.htm>.
In Europe, nearly one out of three physicians are more than 55 years old. <https://www.euro.who.int/en/health-topics/Health-systems/health-workforce/data-and-statistics>
- 47 Pandemic Periods. <https://pandemicperiods.com/about-us/>
- 48 Plan International (2021) Periods in a Pandemic. <https://plan-international.org/publications/periods-in-a-pandemic#download-options>

ABOUT WOMEN IN GLOBAL HEALTH

WGH is an organization built on a global movement with the largest network of women and allies working to challenge power and privilege for gender equity in health. It is a US 501(c)(3) started in 2015 and has grown to include over 50,000 supporters in 90 countries and has 40 official chapters, with a majority in low-and middle-income countries. Through our country-level presence, we build and strengthen in-country political commitment to gender equality in health systems and reinforce these commitments through collective grassroots action. The global team and its network of chapters drive change by mobilizing a diverse group of emerging women health leaders, by influencing existing global health leaders to commit to transforming their own institutions, and by holding these leaders accountable.

*WGH chapters have been established in Australia, Bangladesh, Benin, Bolivia, Brazil, Burkina Faso, Cameroon, Canada, Chile, China, Côte d'Ivoire, Egypt, Finland, Germany, Guinea, India, Ireland, Kenya, Malawi, Niger, Nigeria, Norway, Pakistan, Philippines, Portugal, Somalia, South Africa, Spain, Sweden, Switzerland, Togo, Uganda, UK, USA, Zambia and Zimbabwe.

