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Women in Health and their Economic, Equity and Livelihood statuses during Emergency Preparedness and Response (WHEELER) protocol: a mixed methods study in Kenya

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ABSTRACT

Introduction Kenya reported its first COVID-19 case on 13 March 2020. Pandemic-driven health system changes followed and unforeseen societal, economic and health effects reported. This protocol aims to describe the methods used to identify the gender equality and health equity gaps and possible disproportional health and socioeconomic impacts experienced by paid and unpaid (community health volunteer) female healthcare providers in Kilifi and Mombasa Counties, Kenya during the COVID-19 pandemic.

Methods and analysis Participatory mixed methods framed by gender analysis and human-centred design will be used. Research implementation will follow four of the five phases of the human-centred design approach. Community research advisory groups and local advisory boards will be established to ensure integration and the sustainability of participatory research design.

Ethics and dissemination Ethical approval was obtained from the Institutional Scientific and Ethics Review Committee at the Aga Khan University and the University of Manitoba.

This study will generate evidence on root cultural, structural, socioeconomic and political factors that perpetuate gender inequities and female disadvantage in the paid and unpaid health sectors. It will also identify evidence-based policy options for future safeguarding of the unpaid and paid female health workforce during emergency preparedness, response and recovery periods.

STRENGTHS AND LIMITATIONS OF THIS STUDY

- ⇒ Participatory and mixed methods approach allows for breadth and depth of health care provider experiences.
- ⇒ Participatory processes generate cocreated knowledge that is meaningful and useful to those who own it.
- ⇒ Data collection grounded in feminist development and evaluation theories ensures that analysis moves beyond standard research outputs.
- ⇒ Our study is retrospective and thus recall bias cannot be eliminated.
- ⇒ Health care providers negatively affected by COVID-19 may have left the health system, excluding our ability to capture their experiences.

INTRODUCTION

In March of 2020, the WHO declared the COVID-19 pandemic.[1,2] Several public health and social mitigation measures were instituted globally and in Kenya to help slow disease progression.[1,3–5] These measures included promotion of hand hygiene, cough etiquette, wearing of face masks in public areas, social and physical distancing, scaling down of social gatherings, school closures, nationwide dusk to dawn curfews, restriction of travel into and out of several counties with high caseloads, mandatory isolation of confirmed cases and quarantine for suspected cases, restriction of international travel with exemption of cargo, work-from-home orders and closure of work and entertainment areas including restaurants and bars.[1,3–5]

Kenya, a lower middle-income country in Eastern Africa implemented several immediate health system mitigation measures and adjustments in addition to the public health and social restriction measures. The notable changes included conversion of health facilities to isolation facilities; health workforce reorganisation to serve in the isolation centres; reduction in community-based health promotion activities due to physical distancing measures[1,3]; and reduction of traffic within health facilities by reducing and/or reorganising patient flow and advising the public to visit the hospital only when necessary.[6]

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These measures had several unintended health, economic and societal consequences. The country witnessed a decrease in utilisation of healthcare services, which was already low (31.2%) prepandemic,[7] increase in community births,[6] increase in food insecurity, reduction in overall well-being of the population, and loss of income.[1 8–12]

Women in general were reported to be disproportionately affected by the pandemic containment measures.[11] More women than men reported reduction in their earnings,[9 13] skipped meals, went without necessary healthcare[11] and assumed more unpaid labour, including greater domestic household responsibilities such as cooking, fetching water, cleaning and childcare.[12]

COVID-19 and the health workforce

Readiness for and responsiveness of healthcare systems to any health crisis depends heavily on a strong health workforce of all cadres and levels. Worldwide, health pandemics are recognised for the additional strain they place on the healthcare system. For low-and-middle income countries that are already grappling with a high burden of multiple morbidities, low densities of personnel and health facilities and inadequate health financing and health products, the additional strain caused by health pandemics is even more pronounced.[14] Healthcare workers are especially affected. During the COVID-19 pandemic, healthcare workers reported anxiety as a result of limited knowledge of the disease[15]; limited access to adequate protective equipment and infection with COVID-19 with some succumbing to the disease in the line of duty.[1 16]

Health services are often insufficiently responsive to women's specific health needs, yet they are highly dependent on women as providers of care. Globally, 70% and up to 90% of the health and social care workforce are women.[17] In Kenya, approximately 90% of the formal health workforce are either nurses or clinical officers,[18] the majority of whom are women. As the care providers most likely to be providing frontline care, female healthcare providers (HCPs) face an increased risk of COVID-19 infection. In Spain, women accounted for 73% of COVID-19 infections among healthcare workers,[13] while in China, nurses, predominantly women, had a 2.7-fold risk of contracting COVID-19 compared with physicians who are predominantly men.[19] In addition, women perform two to three times more informal care work than men globally[20]; and in the context of COVID-19, women absorbed additional unpaid care work, which is often associated with worse mental health outcomes, especially if juggled alongside paid employment.[21]

Several studies have assessed the impact of COVID-19 and its public mitigation measures on healthcare systems and on the population's ability to access essential healthcare services.[1 3 15] However, the ways in which COVID-19 impacted the health and well-being of people through disruptions to economic opportunities and livelihoods and changes to work-related health and safety has remained largely unexplored. Likewise, relevant research on the potential disproportional impact on women's health and livelihoods in relation to women's health and paid and unpaid work is limited. More so, few research studies evaluate the disproportional impact and effects of the pandemic and the public mitigation measures on the paid and unpaid female health workforce in low and middle-income countries. In these contexts, the unpaid female health workforce consists predominantly of community health volunteers (CHVs). The Women in Health and their Equity, Economic and Live Hood Status during Emergency Preparedness and Response (WHEELER) project seeks to address this knowledge gap.

The project will focus on the effects and possible impact of work-related health and safety changes and the disruption to paid and unpaid female HCPs. The latter include the female community CHVs, who juggle voluntary unpaid healthcare work, domestic care and informal sector work for their livelihoods. The focus on female HCPs is informed by published evidence revealing that contextual, cultural, socioeconomic status and numerous identity factors differentiate women's experience of COVID-19, transcending borders and making explicit globalised structures of inequities.[19]

METHODS AND ANALYSIS

Aim and objectives

Study aim

This research aims to provide evidence on the health, economic and societal impacts of COVID-19 and its mitigation measures on female paid and unpaid (CHVs) public sector HCPs in Kilifi and Mombasa counties, Kenya. This evidence is required to support the development of inclusive and gender transformative policies and strategies that promote resilient health systems when faced with future emergencies and crises.

Study objectives

1. To describe the impact of COVID-19 on women HCPs (paid and unpaid) health and well-being within the context of the disruptions to economic opportunities and livelihoods and changes to work-related health and safety.
2. To examine gender vulnerabilities associated with the pandemic among the facility- and community-based health workforce.
3. To describe the coping strategies adopted both men and women HCPs (paid and unpaid) across the different cadres, age groups, geographies, ranks and level of care during the COVID-19 pandemic.
4. To generate gender transformative and inclusive policy recommendations and develop recovery and sustainable readiness strategies to minimise the negative impact of COVID-19 and safeguard the women in health workforce in future health crises.

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Figure 1 Study site—Mombasa Kilifi Counties in Kenya (marked in red).

Research settings

Geographical setting

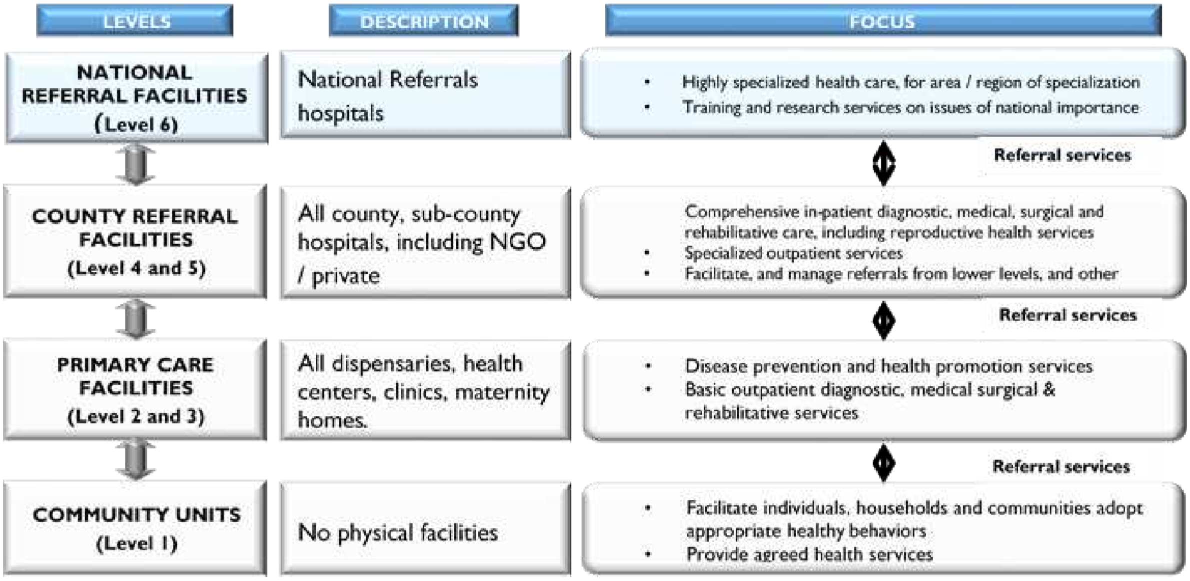
The research will be implemented in one rural and one urban county, Kilifi and Mombasa, respectively (see figure 1) between October 2022 and October 2024. These sites were selected based on differences in COVID-19 rates; the rural/urban context; economic status and the health indicators compared with national average. Site differences will facilitate the generation of evidence broadly applicable to different contexts, but that can also be appropriately tailored to the local context, helping accelerate the impact of the findings and new recommendations.

Kilifi County is situated in the Coastal region, with a population of 1 453 787 in a largely rural area, 60 km north of Mombasa County.[7] One of the poorest counties in Kenya, it has a 71.4% poverty level: the prepandemic average income per person was 1000 Kenya Shillings (approximately USD 10 using the 2019-dollar rate) per month.[22] The county has a total of 145 government-owned health facilities (1 county referral hospital, 4 subcounty hospitals and 140 dispensaries and health centres) with 1466 paid HCPs and 3437 CHVs.

Mombasa county is an urban city situated in the South-Eastern part of Kenya's Coastal region with an estimated population of 1 208 333[7] of which 44% live on less than two dollars a day. The county has a total of 42 government-owned health facilities (one county referral and teaching hospital, 4 Sub County hospitals and 37 dispensaries and health centres) with 2357 paid HCPs and 2387 CHVs.

Health service provision setting

Health service provision in Kenya is organised along six levels (see figure 2): community (level 1), primary care facilities (dispensaries (level 2) and health centres (level 3), subcounty hospitals (level 4), county referral hospitals (level 5) and national referral services (level 6).[23] Kenya's national health facility density is 2.2 per 10 000 populations, slightly above the WHO target of 2 per 10 000. The public health sector accounts for the largest proportion of HCPs at 58.1% compared with the private sector. The national core health workforce is low at 40% with an average density of 15.6/10 000. The majority of HCPs serve in urban areas (52.7%). National coverage by the informal CHV workforce is 93%.[18 24] The community health workforce provides the critical link between households and HCPs and bridges the recognised gap in human resources for health.[25] The community health workforce is made up of the formal government employed community health assistants/officers and the unpaid CHVs.[18] During the pandemic, the CHVs played a pivotal role in providing health education for COVID-19 prevention to the communities.[2 3]



LEVELS	DESCRIPTION	FOCUS
NATIONAL REFERRAL FACILITIES (Level 6)	National Referrals hospitals	• Highly specialized health care, for area / region of specialization • Training and research services on issues of national importance
COUNTY REFERRAL FACILITIES (Level 4 and 5)	All county, sub-county hospitals, including NGO / private	Comprehensive in-patient diagnostic, medical, surgical and rehabilitative care, including reproductive health services • Specialized outpatient services • Facilitate, and manage referrals from lower levels, and other
PRIMARY CARE FACILITIES (Level 2 and 3)	All dispensaries, health centers, clinics, maternity homes.	• Disease prevention and health promotion services • Basic outpatient diagnostic, medical surgical & rehabilitative services
COMMUNITY UNITS (Level 1)	No physical facilities	• Facilitate individuals, households and communities adopt appropriate healthy behaviors • Provide agreed health services

Figure 2 Organisation of health services delivery in Kenya. NGO, Non-Governmental Organisation.

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Study design

The research will employ a participatory mixed-method approach, informed by human-centred design (HCD),[26] gender-based analysis plus (GBA+)[27] and equity frameworks to answer the research aim and objectives over a 24-month period. The methodology will involve both male and female paid and unpaid (CHVs) HCPs at different levels of the public healthcare system. Inclusion of both groups will facilitate gender analysis that facilitates exploration of the relational nature of gender and how this further shaped women HCPs experiences during COVID. The design will take into account the gender roles and gender needs as well as broader institutional considerations.

Human-centred design

HCD is a participatory research approach that uses collective learning process to develop solutions that work, which are adapted to the users' needs, and that can be integrated within the existing system.[28] HCD is premised on active engagement of the stakeholders throughout the design, planning, implementation and evaluation of the service or product in an inclusive and participatory manner.[26] It offers an opportunity to design with communities (in our case, we prioritised female paid and unpaid HCPs) to deeply understand the community group (their needs, experiences, behaviours, expectations, relationships) within a broader context, to formulate ideas with the community and to create innovative solutions rooted in people's actual needs.[26 28] The HCD approach follows five phases: (1) empathise phase: this stage involves understanding the problem of the beneficiaries/community one wishes to assist/design for. For this study, we shall collect both quantitative and qualitative data as described in the sections below; (2) define phase: here findings from the empathise phase are used to describe the user needs and current problems and redefine the problem statements, if necessary. This phase forms the first phase of iteration; (3) ideate and synthesise phase—this phase focuses on the creation of as many different ideas as possible to solve the problem identified in the define phase. Afterward, ideas are synthesised, organised and decided collectively by the team, including all the end users and beneficiaries. This will be done either by way of voting or short discussion, and the ideas they wish to proceed with as solutions for the problems identified are documented; (4) prototype/critical review phase—here real representations of the selected ideas are brought forth and discussed against domains of feasibility, appropriateness and acceptability. Finally (5) test phase—here the ideas/solutions arrived at in the prototype phase are tested with the aim of understanding the barriers and challenges of implementing the prototype, and if need be, the team goes back to the earlier phases of the process.[26] For the purpose of this research, we shall apply the first four phases of the HCD process.

Gender-based analysis plus

GBA+ offers a framework that centres gender, rights and power relations throughout the research cycle, thereby generating knowledge, that is meaningful and useful to those who actually own it. Evidence points to gendered impacts of the pandemic, with those who are poor, marginalised and vulnerable disproportionately affected by the pandemic.[29] Our analysis framework will use GBA+ principles of intersectionality to analyse our quantitative and qualitative data across numerous domains such as but not limited to age, race, education, religion, marital status and cadre of provider. The application of the GBA+ will allow the research to go beyond the standard outputs of gender and sex-disaggregation of data but to delve deeper on how the diverse groups of women, men and non-binary HCPs experienced the pandemic and the policies around the preparedness, response and recovery phases of the pandemic.

Study procedures

The research will be conducted in three phases: (1) planning (6 months), (2) research implementation (12 months) and (3) knowledge mobilisation/dissemination (6 months).

The planning phase

During this phase, research staff will be recruited and trained, literature reviews will be conducted, research tools will be developed and piloted, ethics approval will be sought, knowledge mobilisation plans will be developed and community and key stakeholder advisory groups will be established.

Community research advisory group and local advisory board

The community research advisory group (CRAG) will comprise 13 HCPs, one representative from each of the 13 sub counties in Kilifi and Mombasa counties. The HCPs will consist of those working at various levels of the healthcare system, with strong representation (>50%) of female CHVs. This is to ensure meaningful community participation of those most vulnerable to the effects of the COVID-19 pandemic. The local advisory board (LAB) will comprise 13 members selected from the county health management team, and the local health stakeholders in both Kilifi and Mombasa counties. LAB and CRAG members will receive stipends of 2500 KSH (15 US$) per day for reimbursements of costs incurred to attend in person project meetings but are otherwise not paid for their involvement in the study.

The CRAG and LAB will guide the entire process: review and modify all protocols, instruments and processes for cultural sensitivity; advise the most ethical course for participant recruitment; join group sessions for the contextualisation of study findings and decide on the most appropriate modalities for knowledge mobilisation. In sum, the LAB and CRAG will approve and provide

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insight and oversight at every step of research planning, implementation and dissemination.

Phase 2: research implementation

Data collection procedures

The research will follow four of the five phases of the HCD approach at implementation.

The empathise phase: this phase will entail understanding the problem of the beneficiaries/community we wish to assist/design for. Here we will collect both qualitative and quantitative data.

1. Quantitative data: a survey tool adapted from prior validated surveys in the literature on the effects of COVID-19 to the healthcare workforce and vulnerable population groups.[1 3 15 30] Survey development occurred collaboratively with the CRAG and LAB over a 3-day workshop held in Kilifi in February 2023. The tool was translated into Kiswahili. The study team, CRAG and LAB validated and piloted the survey over 1 week mid-February, 2023, in Mombasa and Kilifi counties. This allowed for additional refinements and finalisation of the survey questionnaire. The survey tool will collect data from male and female paid and unpaid HCPs on the following variables: demographic details; work life during COVID-19; activities performed on COVID-19 patient (s) in health or home-based care setting; adherence to Infection Prevention and Control procedures during healthcare interactions; livelihood and COVID-19; mental health and COVID-19; stigma and COVID-19; domestic work distribution, time use and unpaid labour during COVID-19; agency and empowerment; and pregnancy and breast feeding and COVID-19. Collected data will be uploaded daily to a secure, password-protected server. Any identifying data will be stored separately from the questionnaire on a master list that will first be stored in paper format in a secure locked cabinet in a locked office at the study site, and later in a separate encrypted file on the password-protected server. Use of a digital tool will allow for collection of data in cost-effective manner within a short time frame.
2. Qualitative data collection will follow a multimethod sequential approach with two steps. the first step will consist of Focus Group Discussions (FGDs) with HCPs to gain insight into their experiences during the time of the COVID-19 pandemic and its mitigation measures. Different categories of paid and unpaid HCPs will participate in 15 FGDs across Mombasa and Kilifi. Each FGD will include 6–10 participants for a total of 75 to 90 people. One FGD group will include male and female medical doctors/pharmacists/dentists (four FGDs), the second group male and female nurses, midwives, clinical officers, nutritionists, public health officers, physiotherapists, occupational therapist and laboratory personnel (four FGDs) and a third group male and female CHVs (seven FGDs). In the second step, we will use in-depth interviews to gain a deeper understanding of themes identified during the FGDs, specifically how gender and other identity factors shaped participants' unique pandemic experiences, including physical and mental health issues (for which IDIs are better suited than FGDs). We will conduct 50 IDIs with female, paid and unpaid HCPs in both geographies and from all levels but with greater focus on the experience of women as well as participants from other sex or gender minorities. Guides for FGDs and IDIs will be informed by results from the quantitative survey. Workshops will be held with the study team, CRAG and LAB to collaboratively develop and validate the questions and thematic areas that will be explored. Translation into Kiswahili and piloting of the guides in Mombasa and Kilifi counties will follow, with further refinement as required prior to finalisation of these tools.

Exploratory themes in the FGDs and the IDIs will include facilitators and barriers in provision of care during the pandemic; barriers and enablers to adherence of pandemic mitigation measures; coping mechanisms and career adaptations to the pandemic; perception of the changes in their decision-making power in the home and at work, and past and ongoing experiences of the pandemic, effect on economic livelihoods and coping strategies to mitigate loss of income opportunities. Qualitative data will be recorded using digital audio recorders. Recordings will be uploaded and stored as MP3 files in the secure, password-protected server. These files will then be deleted from the digital recorders. Any identifying data will be redacted prior to translation and transcription. Transcription will be done in rich text format with files stored in the password-protected Aga Khan University server. Participant information sheets will also be stored separately from transcripts in a secure locked cabinet in a locked office at the study site, and later in a separate encrypted file on the password protected server.

Preliminary thematic analysis of the quantitative and qualitative data, will be done and a summary of analytic points, accompanied by narrative excerpts will be presented to a group of stakeholders during define phase.

Define phase: This phase will entail getting deeper insights into the sociocultural, economic and political meanings embedded in the findings from the empathise phase. This phase will take the form of 2-day brainstorming workshops (of 2 days each) with a wide range of stakeholders from both sites, including all cadres of paid and unpaid HCPs of all genders, the CRAG and LAB, the department of health human resources, emergency response organisations, the legislative arm at county level (county assembly health committee members), county health workers associations and unions and local and international healthcare partners

Ideate and synthesise phase: This phase will entail deriving pathways and recovery strategies and solutions that are inclusive, gender equitable and transformative identified in the empathise phase and validated and expanded on in the define phase. This phase will be executed through two focus workshops (of 2 days each) with a wide range of

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stakeholders from both sites, including all cadres of paid and unpaid HCPs of all genders, the CRAG and the LAB, the department of health human resources, emergency response organisations, the legislative arm at county level (county assembly health committee members), county health worker associations and unions and local and international healthcare partners who after identifying the strategies will prioritise them and those accorded highest priority will again be discussed and implementation plans developed.

The prototype/critical review phase: the prioritised strategies and implementation plans identified (prototypes) will be critically appraise by a smaller group of stakeholders comprising of female HCPs (paid and unpaid), and the county and national-level policymakers. The team will select and ratify the best strategies/pathways based on its acceptability, appropriateness and feasibility. This will take place through two focus workshops of 2 days each.

Inclusion criteria, sampling and recruitment

Inclusion criteria

All paid and unpaid HCPs (male and female) working under the public health sector of Mombasa and Kilifi Counties, who can speak English, Kiswahili or a local dialect, above the age of 18 years with no limitations to consent, and are currently employed/engaged as a formal and informal HCP on or before 2019 will be eligible to participate. Up to 1000 paid and unpaid 1500 HCPs will be recruited to participate in the survey in both sites.

Sampling

Sampling proportional to size was used to stratify for level of care, gender and cadre for the quantitative survey. For the quantitative survey, a sample size of 2500 participants (1250 Mombasa and 1250 Kilifi) was generated. The sample size was calculated to have sufficient power to detect the different risk levels within the paid and unpaid group of providers and to ensure that adequate sample was selected to allow for sufficient representation of diverse cadres. At larger health facilities, random sampling of participants will occur with every third HCP selected as a potential participant. At smaller health facilities, all HCPs will be sampled as low numbers prohibit randomisation.

Purposive sampling will be used to obtain the samples for the qualitative methods. This sampling technique will ensure that the FGD and IDI participants reflect the main cadres, geographies, genders and age groups as well as inclusion of those who may be more marginalised or disadvantaged. The sampling criteria will be established in consultation with our advisory group partners as well as findings from the survey. As sample size for qualitative research cannot be predetermined, sampling will occur until saturation of data has occurred. This will happen when no new information is gathered.

Recruitment

Prior to data collection, information about the study will be shared with each county government, the county public sector health facilities and the different cadres of HCPs at the regular county health meetings through the county research officer. Flyers will also be distributed for posting at all facilities with study details and contact information. A key point person (the LAB or CRAG chair) will from each site will facilitate the interaction between participants and the research team.

For the quantitative survey, a research schedule will be established that posts research associates at selected health facilities. Research associates will remain at the facility until the desired number of questionnaires have been completed with the desired cadres and genders of providers. As CHVs are assigned to units based out of facilities, recruitment of this cadre will also occur through the facilities. At larger facilities random selection of HCPs will occur with every third provider selected. In smaller facilities this approach will not be possible and all HCPs will be approached in order to obtain the sample. At time of participation in the quantitative survey all respondents will be asked if they are willing to participate in the qualitative studies. If agreeable phone numbers will be collected on a master list to allow for the individual to be contacted at a later date.

For the qualitative studies, healthcare respondents will be purposively selected from the master list generated during the quantitative survey. Snowball sampling of key stakeholders will also be employed to recruit participants from community, local and regional government and any other participants identified as critical stakeholders.

All participants will be informed that participation is completely voluntary; refusal to participate will in no way affect employment or services; and they will not be identifiable from any descriptive or qualitative data used. The nature of the study will be fully explained as well as the rights and obligations as research participants, including the right to withdraw at any point in the study without negative consequences. Any questions will be answered and signed informed consent will be obtained from all willing to participate. All participants will be assured that confidentiality, privacy and anonymity will be strictly maintained throughout all aspects of the study. All participants will be assigned a research code and the list of code numbers with the corresponding participants' name will be kept in a locked filing cabinet with access only to those on the research team.

Data analysis

Both quantitative and qualitative analysis will be guided by a gender analyses conceptual framework, adapted from existing frameworks, which will take into account gender roles and gender needs[31] as well as broader institutional considerations[32] and be informed by intersectionality theory.[33]

Survey data collected from the questionnaire will be cleaned, coded and stored in a secure server at Aga

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Khan University in Nairobi, Kenya. It will be analysed using STATA. Descriptive statistics will be generated to characterise the sample and enable equity and intersectional analyses and allow normality of distribution to be assessed. T-test will be used to compare continuous variables and the χ^2 test will be used to compare frequencies between groups. ORs and relative risk will be generated. Findings from the questionnaire will be used to inform the development of the interview guides and sampling framework for the qualitative data collection.

Audio recordings will occur of all FGDs and IDIs, provided permission is granted by participants. These will be transcribed and if required translated into rich text format. Thematic analysis will occur with use of NVIVO software following the six steps identified by Braun and Clarke.[34] The *first step* of the analysis will include reading and rereading of all the interview transcripts and notes to aid in familiarisation with the entire data corpus while drafting notes about the initial impressions.

The *second step* will involve generation of initial codes, enabling the data to be organised in a meaningful and systematic way by reducing data into small chunks of meaning. An open coding system will be employed as opposed to developing preset codes, and this will allow for the addition of new codes or modification of the initial ones. In the *third step*, the different codes will then be captured into themes that reflect ideas on COVID-19 and its effect on the health, economic, equity and live hood statuses of HCPs. Several codes that relate to one theme will be merged.

The *fourth step* will entail reviewing, modifying and developing the themes identified in step 3. The issues to consider at this step is whether the themes make sense, whether the data support themes, and considerations for condensing or expanding the themes if they are too large, too thin or overlapping. In the *fifth and sixth steps*, the themes examined in relation to the objectives of the study. Where there are subthemes, these will be examined in relation to each other and to the main theme.

Triangulation of data and feedback from participants will be used to validate findings and ensure appropriate contextualisation of results.

In line with the funder's International Development and Research Centre open data principles (International Development Research Centre 2018), this study will offer unrestricted access to fully anonymised data, thereafter guided by the data protection policies of the Aga Khan University and University of Manitoba.

Project evaluation

This project has embedded an evaluation component in the research. The evaluation objectives will be to: (a) ensure that the project is meeting its objectives, (b) ensure meeting stakeholder needs and (c) ensure project activities are implemented as planned. The evaluation framework will be developed to suit the study protocol. The evaluation instruments will be adapted from the Research Quality plus assessment framework[35] with consideration of contextual factors (internal and external) and their impact on research processes and outcome, the HCD toolkit[26] and the Canadian Coalition for Global Health Research partnership and equity tools.[36] The latter will be added specifically to strengthen assessments of partnership and equity within our partnership.

Phase 3: knowledge mobilisation/dissemination

Dissemination plans are elaborated in the subsequent Ethics and Dissemination section of the manuscript.

Patient and public involvement

Our methodology is informed by past learnings that to be gender transformative, our ultimate research goals must be valued and prioritised by the women we aim to empower, as well as the broader community, the government partner and its key stakeholders. The research process must be driven by the participating women, rely on participatory data collection methods grounded in feminist development and evaluation theories and go beyond standard outputs and gender/sex-disaggregation of data. Our research framework supports an enabling environment: creating space for women to share their lived experience, and prioritising partnerships with community and government, to ensure participation, ownership and sustainability of research design, implementation and translation.

We will involve female and male HCPs at different levels of the public healthcare system to assess the disproportionate impact of COVID-19 and the public mitigation measures and the coping strategies that female and male paid and unpaid HCPs adopted to mitigate negative impacts. Centring feminist principles, gender, rights and power relations throughout the research cycle, coimplementing the project with female HCPs, key community and government decision-makers, remaining adaptable to changing contexts and investing in meaningful feedback processes will generate knowledge that is meaningful and useful to those who actually own it.

Strengths and limitations

Our study is not without limitations: our study is retrospective and thus may have elements of recall bias given the event being explored was in the past. Similarly, it is possible that those HCPs who were most negatively affected by COVID-19 are no longer within the healthcare system and we are unable to capture their experiences. Strengths of our study include use of a participatory and mixed methods approach that allows for breadth and depth of experiences while enabling us to tailor data collection strategies for specific groups; the HCD and participatory process support an enabling environment that centres gender, rights and power relations throughout the research cycle that generates cocreated knowledge that is meaningful and useful to those who actually own it; and data collection grounded in feminist development and evaluation theories ensure analysis moves beyond standard research outputs.

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ETHICS AND DISSEMINATION

Ethical considerations

Ethical approval for this protocol was obtained from Institutional Scientific and Ethics Review Committee, Aga Khan University, Kenya (ref: 2022/ISERC_111 V2); National Commission for Science, Technology & Innovation, Kenya (ref: NACOSTI/P/23/23038); and University of Manitoba (UM) Bannatyne Research Ethics Board (ref: HS25777 (H2022: 382). Administrative approval from the two counties has equally been obtained.

We are aware of the potential social and emotional risks that may be associated with participation in our study. Questions asked in the survey or qualitative studies may elicit strong emotions/anxiety and or depression related to the stress and or stigma encountered while working as a HCP during the pandemic, or related to lived experiences such as, but not limited to, loss of loved ones or gender-based violence as a consequence of COVID. Should any of the question in the interview make the respondent feel uncomfortable, embarrased, stressed, or upset will advise the respondent to say "pass" and move on to the next question, or to stop the interview. Should the respondent need any additional help or support, we will refer them to counselling and support services that are available within the public sector facilities in Kilifi and Mombasa counties, such as at Kilifi County Hospital and Coast General Hospital, or to the mobile counsellors that circulate to the health centers and dispensaries. If they prefer services outside the public sector we will help them find other counseling help through Aga Khan Hospital outpatient services and/other private health care services in both counties. Furthermore, we recognise that as the participants are still working within the public health system, sharing of their experiences may create anxiety due to concerns around potential adverse consequences should they be critical of the local government pandemic response or of behaviours by fellow HCPs. To mitigate against this, through the study's informed consent policy (outlined in the methods section), all participants will be assured that participation is voluntary; withdrawal can occur at any time without adverse consequences; and that privacy, confidentiality and anonymity will be maintained throughout all phases of the study and afterwards.

Availability of data and materials

All data that support the findings of this study will be in the custody of Aga Khan University, Centre of Excellence in Women and Child Health and are available on request made to Evaline Lang'at. Access will only be granted to anonymised and deidentified data. The data request process entails outlining who is requesting the data, why they wish to have access to the data and how and what the data will be used for. Data will also be made available through presenting of data via various knowledge translation activities (ie, peer-reviewed publications, abstracts/posters at conferences, policy briefs, project elaboration reports).

Dissemination

For this project, we will hold a series of participatory meetings with diverse representation of women healthcare workers, community groups, government decision-makers and researchers of different disciplines to facilitate coproduction of knowledge that will ensure that the research questions are grounded in the real-world needs of the end users. Together, the team will develop a collaborative multifaceted Knowledge Management framework to ensure best practices for connecting with end users. This will include direct engagement with the HCPs in both sites through quarterly feedback and review processes; development of knowledge products and processes that are grounded in the different needs of end users and sharing of not only end results but also processes and methods for enhanced and sustained research, advocacy and knowledge translation and management. A knowledge broker will be engaged to assist with additional guidance on the development of knowledge products, such as but not limited, to peer-reviewed publications, policy briefs, news stories, radio and social media sharing, to ensure a broad range of audiences are reached. In addition, we will establish an e-platform for communication, information, training, exchange of experiences and monitoring of how research results have been applied in the short and eventual long term in regard to planning, resource allocation and policy adaptation.

DISCUSSION

The WHEELER protocol outlines a participatory mix methods study, which employs a gender lens to assess how the health and socioeconomic well-being of female HCPs and their work (paid or unpaid) intersect and interact at the micro and macro levels in the context of preparing for responding to and recovering from COVID-19. This will include studying how COVID-19 has changed and potentially disproportionately affected female HCPs' physical and mental health, employment, their professional, personal and livelihood goals and how these challenges differentially impact their socioeconomic status and overall well-being. Our research is timely as increasing evidence has highlighted the gendered impact of COVID-19. Studies that further identify gender inequalities and health equity gaps faced by female paid and unpaid HCPs are essential for the development of gender responsive and transformative workplace policies and strategies. Increasingly important is the generation of evidence that increases awareness of not only the gendered impact of COVID but also the root cultural, political, socioeconomic and structural factors that underpin female inequities in the paid and unpaid health sectors. Resilient health systems will not be possible without solutions that address these root causes and place gender at the heart of short-term (responsiveness, recovery) and medium-term (preparedness and readiness) policies.

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