*(Funding for this work has come from the EMERGE project (Bill and Melinda Gates Foundation Grants: OPP1163682/INV-010695 and INV018007; PI Anita Raj)*

# Assessment of The Gendered Impact of COVID-19 on Health Workers in Nigeria.

**May 2021.**

**By**

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*(Funding for this work has come from the EMERGE project (Bill and Melinda Gates Foundation Grants: OPP1163682/INV-010695 and INV018007; PI Anita Raj)*

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*(Funding for this work has come from the EMERGE project (Bill and Melinda Gates Foundation Grants: OPP1163682/INV-010695 and INV018007; PI Anita Raj)*

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## Executive Summary

Health workers have shown resilience and professional dedication in the global response to the novel COVID pandemic. COVID-19, also known as coronavirus disease, is an infectious disease caused by the novel coronavirus, with the average incubation period being 5.1 days. The origin and source of the SARS-CoV-2 virus is unknown, but it was first reported in Wuhan in China's Hubei province. Globally there have been 162,773,940 confirmed cases of COVID-19, including 3,375,573 deaths and 1,264,164,553 vaccine doses have been administered, to-date. The first confirmed case of COVID-19, was reported in Nigeria on February 27, 2020, in an Italian citizen in Lagos. To date, Nigeria has 165,702 confirmed cases of COVID -19 and 2,066 deaths. Health-care workers are at higher risk of infection during the pandemic. Eighty-nine percent of nurses in Nigeria are women and mostly in the frontline of COVID-19 response, thus increasing their risk to COVID-19 infection due to the number of frontline female healthcare workers contracting the virus in their work.

This study examined the gendered impact of COVID-19 on health workers in the health facilities in Gombe, Katsina, and Zamfara states. The objectives of the research were to assess the knowledge of health workers on COVID-19 infection, assess the impact of COVID-19 on services offered in the health facilities, examine how female health workers cope with health care work and household tasks in COVID-19 situation and gain the perspective of health workers on the impact of COVID-19 on the community. Data were collected from 177 male and 157 female health workers selected from public and private health facilities designated for treatment of COVID-19 in Gombe, Katsina, and the Zamfara States. All cadres of health workers available in the health facilities such as Doctors, Nurses, Midwives, Community Health Extension Workers (CHEW), Junior Community Health Extension Workers (JCHEW), Community Health Officers (CHO), Pharmacy Technicians, as well Laboratory Technicians, were included in the study.

All the health workers interviewed had heard of COVID-19 before the study. About 92% heard about COVID-19 on television, 93% heard from social media, while 46% heard about COVID-19 from family and friends. About 33% of male respondents heard about COVID-19 from newspapers compared to 26% of female respondents, while more female respondents heard about COVID-19 from their colleagues than male respondents. With regard to transmission, more than 90% of respondents knew that droplets could transmit COVID-19 in the air (94.6%),

via contact with the contaminated surface (97%), or contact with infected persons (98%). Knowledge of symptoms and prevention of COVID-19 was high and similar across states and sex.

All the study health facilities in Gombe state provided information, education and communication (IEC) materials on COVID-19 to health workers, while all but one facility in both Katsina and Zamfara states provided IEC materials. In addition, 92% of facilities in Gombe state-provided training on COVID-19 risk reduction compared to 96% of facilities in Katsina and 69% in Zamfara states. Furthermore, all study health facilities in Gombe state provided information on COVID-19 to patients, while all but one facility in both Katsina and Zamfara states provided information on COVID-19. All female respondents interviewed provided information on COVID-19 to patients, while more than 90% of respondents reported the availability of face masks and hand sanitizers across the three states.

About 98% of respondents mentioned that they always or frequently have contact with COVID-19 suspects in the line of their work. The frequency of exposure among male and female health workers was similar. The majority of respondents (94%) agreed or strongly agreed to have a personal risk of being infected with COVID-19 from work. In addition, 47% of respondents agreed or strongly agreed that their willingness to go to work was affected by COVID-19 compared to 49% who disagreed or strongly disagreed. The response was similar across states. Also, 44% of male respondents agreed or strongly agreed that their willingness to go to work was affected by COVID-19 compared to 50% among female respondents. The number of days in a week most respondents went to work range from five to seven days, with 35% of male health workers working for seven days compared to 15% of female health workers working for the same number of days. Overall, 61% of respondents across the three states agreed or strongly agreed that community members do not frequently come to seek health care services for fear of contracting COVID-19.

Furthermore, 75% of respondents across the three states were worried that there are not enough staff and health care facilities to manage COVID-19 cases in their state. Also, 64% of respondents believed there is insufficient protective equipment for health providers. However, 60% of respondents believed people who need COVID-19 treatment would get care. Similarly, 48.5% of respondents were worried about the health care system's ability to help community members with health care issues other than COVID-19 because health care is only being directed to COVID-19 and no other health concerns were prioritized. Under the current

situation, with the COVID-19 pandemic, about 89% of respondents mentioned that community members believe health workers care about them and the needs of the community, and 83% of respondents mentioned that community members believe health workers will be considerate of patient needs.

Furthermore, 92% of female respondents believed they are viewed respectfully or very respectfully. Also, 73% believed respect has increased since the onset of COVID-19 in the state. About 91% of respondents agreed or strongly agreed that their healthcare provision tasks had increased dramatically since COVID-pandemic. A similar percentage of male and female respondents reported an increase in tasks in health care provision. In addition, 78% of female respondents reported an increase in household tasks like cleaning, cooking, and taking care of children and washing clothes and plates compared to 62% of male respondents with a similar response. However, 67% of female respondents reported doing most of the housework without receiving assistance from anyone. Compared to 51% of male respondents with a similar response, 74% of female respondents feel overwhelmed combining health care work with household tasks since the onset of the COVID-19 pandemic.

In conclusion, health care workers are susceptible to higher risks of COVID-19 infection due to the nature of their job, which has increased their vulnerability. The COVID-19 pandemic continues to pose an unprecedented threat and a great challenge to health systems and service delivery. Women are majorly on the front line of the fight against COVID-19 in Nigeria and globally. As a result, they face a double burden such as longer shifts at work and additional care work at home. Female health workers are at risk of infection in the line of duty and subsequent transference of infection to family members. Reducing the burden of care in the household and task shifting in the health facility will provide significant relief to women who are already overwhelmed by combining house chores and health care provision. Finally, female healthcare workers and their male counterparts will benefit from shift duty, allowing them to spend less time in health facilities to ensure work-life balance.

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# Introduction

COVID-19, also known as coronavirus disease, is an infectious disease caused by the novel coronavirus with an average incubation of 5.1 days (Stephen A. Lauer, 2020). The origin/source of the SARS-CoV-2 virus is unknown, but it was first reported in Wuhan in China's Hubei province on February 26, 2020. On March 11, 2020, WHO declared COVID-19 as a pandemic due to the alarming spread and severity. To date globally, there have been 162,773,940 confirmed cases of COVID-19, including 3,375,573 deaths. In recent times, 1,264,164,553 vaccine doses have been administered (WHO, 2020). Most people infected with COVID-19 experience mild to moderate respiratory illness and recover with little or no special treatment. However, older people who have underlying health challenges like chronic non-communicable diseases are at higher risk of developing severe illness. The disease is spread mainly through droplets of saliva discharge when an infected person coughs or sneeze or through contact with infected surfaces including hands, nose and face.

In February 2020, WHO categorized Nigeria among the 13 high-risk African countries in ranking the spread of COVID-19. Nigeria is also among the vulnerable African nations, given the weak state of its healthcare system. In Nigeria, the first case of COVID-19 was reported on February 27, 2020, in an Italian citizen in Lagos. To-date, Nigeria has 165,702 confirmed cases and 2,066 deaths. Lagos has recorded the highest case of COVID-19 (58,713), followed by FCT with 19,841 due to high commercial activities and large number of international travelers arriving in both cities. Study states Gombe, Katsina and Zamfara recorded 2,035, 2,097 and 244 respectively, as of May 17$^{th}$, 2021. COVID-19 preventive measures in the country include handwashing, use of sanitizers, face masks, movement restrictions, lockdown and curfew, and social distancing (NCDC, 2020). Nigeria received 3.94 million doses of AstraZeneca/Oxford vaccine on March 2, 2021. At the time of the reporting, 1.23 million doses of the vaccine have been given to healthcare workers and the general population.

Little progress has been made in attaining gender equality since the COVID-19 pandemic struck worldwide. The pandemic's effect is a global health emergency and has caused a major economic downturn (Alon et al., 2020). A UN study shows that the COVID-19 pandemic affected women and girls in Southern and East Africa, making it challenging to achieve SDG3 and SDG 5, as COVID-19 has been described as widening the existing gender gaps (Fisher & Ryan, 2021). The gender inequalities brought by the pandemic can be seen across different

socio-economic groups. The reduction in income has increase food insecurity; schools had to be closed during the lockdown, health and health-seeking behavior declined as many women were unable to access care because of the lockdown, the pandemic disrupted routine services such as treatment of chronic illnesses, child welfare, sexual and reproductive health, maternal care for pregnant women and family planning and HIV prevention. An additional hardship for women and girls has been limited or no access to menstrual health and hygiene (Maula, 2021).

In Nigeria, many women and girls live in rural areas, internally displaced persons' (IDP) camps, and slums and with limited access to accurate information and adequate healthcare services. Women and girls are also at a greater risk of facing increased gender-based violence due to extended stay at home orders and tensions brought about by financial hardships (Brief, 2020). Due to the closure of schools, there was an increase in drop-out rates among girls, which led to the increase in the prevalence of early marriage and teenage pregnancy (World Vision report 2020). Also, access to GBV and sexual reproductive health services was limited because of the lockdown (Brief, 2020). The majority of the health care workers in Nigeria and females are usually at the frontline in the response to the pandemic, putting them at greater risk of infection (UN report, 2020).

The risk of health workers contracting an infection during a pandemic is very high (Koh, 2020). WHO (2020) reported that over 10,000 health workers had tested positive for the virus in Africa. There is a broad consensus that the outbreak of an infectious disease is often linked with adverse psychological outcomes. Various factors cause adverse psychological outcomes among healthcare workers during a pandemic such as COVID-19 due to high mortality levels. Adverse outcomes noted include: inadequate medical supplies, personal protective equipment, fears of contracting the disease, uncertain quarantine duration, stigma and discrimination and spreading it to family members, grief over the death of professional colleagues and patients, stigma, and discrimination (Si et al., 2020 & Shaukat N et al., 2020). Containment measures, including compulsory or self-quarantine and social distancing, significantly increase the risk of mental disorders, such as depression, anxiety, thought disorders, and post-traumatic stress (PTS) when used for an extended period (Si et al., 2020).

Healthcare workers are prone to depression and anxiety during a pandemic due to direct exposure to the virus. In Oyo state Nigeria, a study on non-medical personnel in the hospital reported a higher prevalence of anxiety during the COVID-19 pandemic than the medical

healthcare workers (Adewole & Ajala, 2020). Tan et al., (2020) found out that non-medical health care workers had a higher prevalence of anxiety than medical health care workers. During the COVID-19 pandemic in Singapore, more females than males and more nurses than physicians have mental illness due to the infectious outbreak (Tan et al., 2020). Frontline health workers who directly contact COVID-19 patients are at higher risk of depression, anxiety, insomnia, and distress (Shaukat N et al., 2020). Inadequate availability of personnel protective equipment (PPE) is also a crucial issue. This problem is worse in low and middle-income countries like Nigeria, and unacceptable proportions have been reported in developed countries. Since the outbreak of COVID-19, the direct and indirect impact on health, training, wellbeing, and uncertainty were crucial issues of early-career doctors, while the effect on health includes those on physical, social, and mental aspects (Abdessater et al., 2020).

Women make up 89 percent of nurses in Nigeria and are the majority of frontline health workers and caregivers. Frontline providers dealing with COVID-19 might experience stigmatization, isolation, and social discrimination. Cultural factors may limit women's access to information and services. Women of all categories may be particularly affected, including female heads of households, older women living alone, and migrant women and those with responsibilities of domestic and care work. At the same time, a stay at home or isolation for a protracted period within households may increase the risk of violence in the home (UN report 2020). Gender is understood as a critical social divide in health-related research. It acknowledges that gender influences the positioning of women and men within healthcare structures and their experiences within that location (Morgan et al., 2016).

## Aim of the study

This research aims to assess the gendered impact of COVID-19 on health workers in the health facilities in Gombe, Katsina, and Zamfara states in Nigeria where the project "Reaching and Empowering Adolescents to make informed choices for their Health" is currently being implemented.

## Research Objectives

Specific objectives of the study are to

1. Assess the knowledge of health workers on COVID-19 infection,
2. Assess the impact of COVID-19 on services offered in the health facilities,

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3. Examine how female health workers cope with health work and household tasks in the COVID-19 situation,
4. Gain the perspective of health workers on the impact of COVID-19 on the community.

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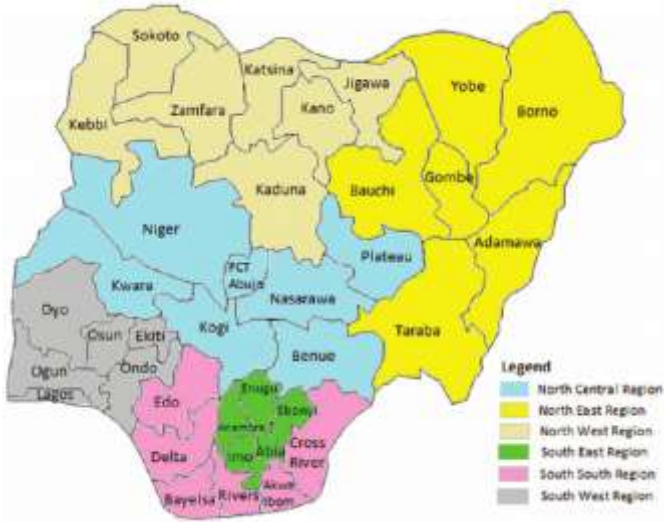
## Methodology

### Study design

The study is a cross-sectional, multi-center survey implemented between April and May 2021. Primary and secondary health facilities were purposively selected from the Gombe, Katsina, and Zamfara states. The study was conducted in both public and private health facilities that were involved in the management of COVID-19.

### Study location and distribution of health facilities




Gombe state, whose capital is also known as Gombe, is located in North-East Nigeria with an estimated population of 2,365,000 people and an area of 18,768km$^2$. It shares boundaries with Adamawa, Bauchi, Yobe, Borno, and Taraba states, comprising 11 Local Government Areas: Akko, Balanga, Billiri, Dukku, and Funakaye Gombe, Kaltungo, Kwami, Nafada, Shongom, Yamaltu/Deba. A total of 615 health facilities are present across the 11Local Government Areas (LGAs) (Bhattacharya, et al., 2019). According to information gotten from the National Center for Disease Control (NCDC), there have been 2,034 confirmed cases of COVID-19 and 44 deaths.

Katsina state is located in the North-West of Nigeria and occupies about 4.1% of Nigeria's total population with an estimate of 8,315,581. It comprises 34 local government areas, which cover a landmass of 23,561km$^2$ (NIPC, 2021). Aside from poverty, which is the main threat to public health, diseases such as malaria, cholera, measles, ulcers, smallpox, diarrhea, and typhoid are existing public health issues. (Abubakar & Abdurrahman, 2018). According to

Abubakar and Abdurrahman, 2018, the Katsina state health care delivery system comprises one medical center, 24 comprehensive centers, 87 primary health centers, 504 health centers, 41 dispensaries, 90 maternal and child health clinics, 81 health posts, 21 pharmaceutical shops, and 1703 patent medicine shops. There have been 2,097 confirmed cases of COVID-19 in Katsina and 34 deaths (NCDC, 2021).

Zamfara state is also situated in the North-Western part of Nigeria. It shares boundaries with Sokoto, Niger, Kaduna, Kebbi, and Katsina states. It comprises 14 local government areas with a population of 5,307,154 on a total land area of 37,931km$^2$ (NIPC, 2021). Health facilities in Zamfara state include one tertiary hospital, 23 general hospitals, 668 primary health centers, 150 maternal and child health clinics, and 22 private hospitals (MTSS, 2014). Zamfara has a total number of 240 confirmed cases of COVID-19 and two deaths (NCDC, 2021).

## Sample Size

The study was conducted in public and private health facilities providing care to COVID-19 patients in the three states. The list of health facilities was received from the States' Ministry of Health, and all were included in the study. All cadres of health workers available in the health faculties such as Doctors, Nurses, Midwives, Community Health Extension Workers (CHEW), Junior Community Health Extension Workers (JCHEW), Community Health Officers (CHO), Pharmacy Technicians, as well as Laboratory Technicians, were included in the study. Overall, data collection was conducted in Gombe, Katsina, and Zamfara states, among 177 male and 157 female health workers available in the 16 health facilities included in the study.

## Study tool and administration

The study questionnaire was developed and pretested before survey administration. In addition, prior to implementation, the questionnaire was piloted in selected health facilities that were not included in the study. The questionnaire included questions on location, gender, and the cadre of health workers, years of experience, type of health facilities, service provided, and personal risk of contracting COVID-19, and opinion on the preparedness of health facilities on prevention of COVID-19 infection and spread in health facilities. Also, questions on unpaid care work the effect and the acceptance of women health workers in the community were included. Some of the question were adapted from EMERGE site

(https://emerge.ucsd.edu/covid-19/). The questionnaire was administered electronically to consenting health workers by trained research assistants over two weeks.

## Ethical Approval

Ethical approval was sought and provided by the State Research Ethics Committees and the Ethics committees in all the Federal medical centers in each state included in the study. Furthermore, the study was administered to only consenting health workers. Details of participants and all forms of identification were treated as confidential and not included in the questionnaire.

## Data Management and Report

Data from the study were stored in password-protected computers and servers to prevent unauthorized access. In addition, de identified data were analyzed in Excel and SPSS. Findings from the study are presented in subsequent sections of this report.

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# Results

## Sociodemographic characteristics of respondents

The study participants were 12.6% medical doctors, 40.4% nurses and 14.1% laboratory scientists. About 52% of the respondents were aged 31 to 40 years, while 81% were married. The average duration of work experience was 11 years. Other Sociodemographic information is presented in tables 1 to 5.

**Table 1: Sex of respondents**

| **Sex** | **Gombe** | | **Katsina** | | **Zamfara** | | **Total** | |
|---|---|---|---|---|---|---|---|---|
| | # | % | # | % | # | % | # | % |
| Male | 61 | 53.9 | 49 | 48.5 | 67 | 55.8 | 157 | 47.0 |
| Female | 52 | 46.1 | 52 | 51.5 | 53 | 44.2 | 177 | 53.0 |
| Total | 113 | 100 | 101 | 100 | 120 | 100 | 334 | 100 |

*Source: field data*

**Table 2: Age group of respondents**

| **Age group** | **Gombe** | | **Katsina** | | **Zamfara** | | **Total** | |
|---|---|---|---|---|---|---|---|---|
| | # | % | # | % | # | % | # | % |
| 21 – 30 | 18 | 15.9 | 29 | 28.7 | 12 | 10 | 59 | 17.7 |
| 31 – 40 | 63 | 55.8 | 38 | 37.6 | 73 | 60.8 | 174 | 52.1 |
| 41 – 50 | 21 | 18.6 | 25 | 24.8 | 31 | 25.8 | 77 | 23.1 |
| 51 and above | 11 | 9.8 | 9 | 8.9 | 4 | 3.3 | 24 | 7.2 |
| Total | 113 | 100 | 101 | 100 | 120 | 100 | 334 | 100 |

*Source: field data*

**Table 3: Marital status of respondents**

| **Marital status** | **Gombe** | | **Katsina** | | **Zamfara** | | **Total** | |
|---|---|---|---|---|---|---|---|---|
| | # | % | # | # | # | % | # | % |
| Single | 15 | 13.3 | 28 | 27.8 | 10 | 8.3 | 53 | 15.9 |
| Married | 95 | 84.1 | 70 | 69.3 | 105 | 87.5 | 270 | 80.8 |
| Divorces/widowed/others | 3 | 2.7 | 3 | 2.9 | 5 | 3.3 | 10 | 2.9 |
| Total | 113 | 100 | 101 | 100 | 120 | 100 | 334 | 100 |

*Source: field data*

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**Table 4: Cadre of respondent**

| Cadre of respondent | Gombe | | Katsina | | Zamfara | | Total | |
|---|---|---|---|---|---|---|---|---|
| | # | % | # | % | # | % | # | % |
| Doctor | 5 | 4.5 | 22 | 21.8 | 33 | 27.3 | 60 | 18.0 |
| Nurse | 38 | 33.9 | 39 | 38.6 | 58 | 47.9 | 135 | 40.4 |
| Midwife | 2 | 1.8 | 0 | 0.0 | 9 | 7.4 | 11 | 3.3 |
| Nurse/Midwife | 5 | 4.5 | 7 | 6.9 | 11 | 9.1 | 23 | 6.9 |
| CHEW | 23 | 20.5 | 4 | 4.0 | 5 | 4.1 | 32 | 9.6 |
| JCHEW | 5 | 4.5 | 0 | 0.0 | 2 | 1.7 | 7 | 2.1 |
| CHO | 4 | 3.6 | 0 | 0.0 | 0 | 0.0 | 4 | 1.2 |
| Lab Technician | 18 | 16.1 | 28 | 27.7 | 1 | 0.8 | 47 | 14.1 |
| Pharmacist | 2 | 1.8 | 1 | 1.0 | 2 | 1.7 | 5 | 1.5 |
| Others | 10 | 8.9 | 0 | 0.0 | 0 | 0.0 | 10 | 3.0 |
| Total | 112 | 100 | 101 | 100 | 121 | 100 | 334 | 100 |

*Source: field data*

**Table 5: Years of experience**

| Years of experience | Gombe | | Katsina | | Zamfara | | Total | |
|---|---|---|---|---|---|---|---|---|
| | # | % | # | % | # | % | # | % |
| 5 years and below | 26 | 23.0 | 36 | 35.6 | 21 | 17.5 | 83 | 24.8 |
| 6 to 10 years | 37 | 32.7 | 25 | 24.8 | 48 | 40 | 110 | 32.9 |
| More than 10 years | 50 | 44.3 | 40 | 39.6 | 51 | 42.5 | 141 | 42.2 |
| Total | 113 | 100 | 101 | 100 | 120 | 100 | 334 | 100 |

*Source: field data*

## Types of Health facility and service provision

More than half (65.9%) of the respondents were drawn from tertiary health facilities, 23.4% were from secondary health facilities, while 10% were from primary health facilities. In addition, the study sought information on different kinds of services provided by the health facilities and the provision of information on health services to adolescents. The majority of the facilities (90.7%) provide information on health services to adolescents—also, 94% of the health facilities were open for 24 hours.

**Table 6: Type of health facility**

| Type of Health Facility | Gombe | | Katsina | | Zamfara | | Total | |
|---|---|---|---|---|---|---|---|---|
| | # | % | # | % | # | % | # | % |
| Tertiary Hospital (Private) | 0 | 0 | 18 | 17.8 | 1 | 0.8 | 19 | 5.7 |
| Tertiary Hospital (Public) | 12 | 10.6 | 75 | 74.3 | 114 | 95 | 201 | 60.2 |
| Secondary Health facility | 63 | 55.8 | 7 | 6.9 | 5 | 4.2 | 75 | 22.5 |
| Center/Primary health center | 35 | 30.9 | 1 | 0.9 | 0 | 0 | 36 | 10.8 |
| Private practice (Out Patient Department /Hospital) | 3 | 2.7 | 0 | 0 | 0 | 0 | 3 | 0.9 |
| Total | 113 | 100 | 101 | 99.9 | 120 | 100 | 334 | 100 |

*Source: field data*

## Awareness and source of information on COVID-19

All the health workers interviewed had heard of COVID-19 before the study. In addition, about 92% heard about COVID-19 on television, 93% heard from social media, while 46% heard about COVID-19 from family and friends. Furthermore, about 74.6% of respondents demonstrated fair knowledge of the causes, symptoms, and prevention of COVID-19. The summary of sources of information on COVID-19 is provided in Table 7.

**Table 7: Source of information on COVID-19 by state**

| Sources of information | Gombe | | Katsina | | Zamfara | | Total | |
|---|---|---|---|---|---|---|---|---|
| | # | % | # | % | # | % | # | % |
| Newspaper | 63 | 55.8 | 73 | 72.3 | 60 | 50 | 196 | 58.7 |
| Television | 103 | 91.2 | 97 | 96 | 108 | 90 | 308 | 92.2 |
| Social media | 103 | 91.2 | 96 | 95.1 | 113 | 94.2 | 312 | 93.4 |
| Government representative | 41 | 36.3 | 80 | 79.2 | 55 | 45.8 | 176 | 52.7 |
| Colleagues | 59 | 52.2 | 77 | 76.2 | 88 | 73.3 | 224 | 67.1 |
| Family and friends | 26 | 23 | 61 | 60.4 | 67 | 55.8 | 154 | 46.1 |

*Source: field data*

The source of COVID-19 information differs by sex of respondents. About 61% of male respondents heard about COVID-19 from newspapers compared to 56% of female respondents, while more female respondents heard about COVID-19 from their colleagues than male respondents. This is presented in Table 8.

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**Table 8: Source of information on COVID-19 by sex**

| Source of information on COVID-19 | Male | | Female | | Total | |
|---|---|---|---|---|---|---|
| | # | % | # | % | # | % |
| Newspaper | 108 | 61.0 | 88 | 56.1 | 196 | 58.7 |
| Television | 160 | 90.4 | 148 | 94.3 | 308 | 92.2 |
| Social media | 166 | 93.8 | 146 | 93.0 | 312 | 93.4 |
| Government representative | 97 | 54.8 | 79 | 50.3 | 176 | 52.7 |
| Colleagues | 119 | 67.2 | 157 | 100.0 | 224 | 67.1 |
| Family and friends | 82 | 46.3 | 72 | 45.9 | 154 | 46.1 |

*Source: field data*

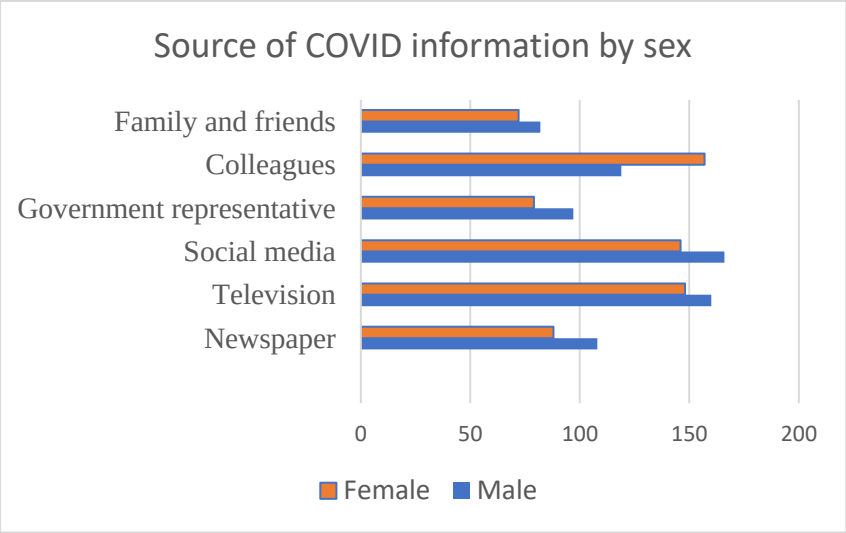


**Figure 1: Source of COVID information by sex**

Furthermore, more than 90% of respondents knew that droplets could transmit COVID-19 in the air (94.6%), contact with a contaminated surface (97%), and contact with infected persons (98.2%), as presented in table 9. There is no gender difference in routes of knowledge of transmission of COVID-19.

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**Table 9: Knowledge of routes of transmission of COVID-19 by state**

| Knowledge of routes of transmission of COVID-19 | Gombe | | Katsina | | Zamfara | | Total | |
|---|---|---|---|---|---|---|---|---|
| | # | % | # | % | # | % | # | % |
| Droplets in the air | 107 | 94.7 | 97 | 96 | 112 | 93.3 | 316 | 94.6 |
| Contact with contaminated surfaces | 112 | 99.1 | 94 | 93.1 | 118 | 98.3 | 324 | 97.0 |
| Contacted with an infected person | 112 | 99.1 | 97 | 96 | 119 | 99.2 | 328 | 98.2 |

*Source: field data*

Knowledge of symptoms of COVID-19 is presented in table 10. While 99% identified severe headache and fever, persistent and dry cough as signs of COVID-19, 95% identified difficulty breathing or shortness of breath, 83% identified loss of taste and smell, while 84% identified sore throat. The least identified symptoms were abdominal pain and diarrhea, and vomiting.

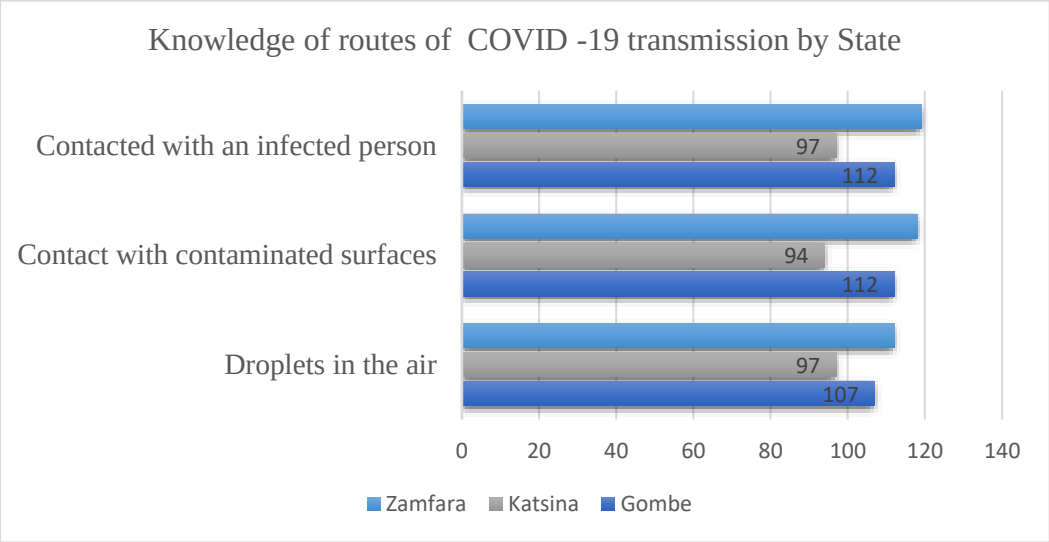


**Figure 2:Knowlegde of routes of COVID-19 transmission by state.**

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**Table 10: Knowledge of symptoms of COVID-19 by state**

| Knowledge of symptoms of COVID-19 | Gombe | | Katsina | | Zamfara | | Total | |
|---|---|---|---|---|---|---|---|---|
| | # | % | # | % | # | % | # | % |
| Severe Headaches and Fever | 113 | 100 | 100 | 99 | 119 | 99.2 | 332 | 99.4 |
| Persistent and dry cough | 111 | 98.2 | 99 | 98 | 112 | 93.3 | 322 | 99.4 |
| Difficulty breathing or shortness of breath | 111 | 98.2 | 95 | 94.1 | 112 | 93.3 | 318 | 95.2 |
| Abdominal pain | 20 | 17.7 | 34 | 33.7 | 29 | 24.2 | 83 | 24.9 |
| Diarrhea and vomiting | 21 | 18.6 | 43 | 42.6 | 50 | 41.7 | 114 | 34.1 |
| Night sweats | 4 | 3.5 | 14 | 13.9 | 42 | 35 | 60 | 17.9 |
| Running nose and catarrh | 88 | 77.9 | 77 | 76.2 | 68 | 56.7 | 233 | 69.8 |
| Loss of taste and smell | 99 | 87.6 | 81 | 80.2 | 97 | 80.8 | 277 | 82.9 |
| Sore throat | 106 | 93.8 | 84 | 83.2 | 91 | 75.8 | 281 | 84.1 |

*Source: field data*

Table 11 presents knowledge of symptoms of COVID-19 by sex. Again, there is similarity between the number of male and female respondents identifying severe headache and fever and persistent and dry cough as symptoms of COVID-19.

**Table 11: Knowledge of symptoms of COVID-19 by sex**

| Knowledge of symptoms of COVID-19 | Male | | Female | | Total | |
|---|---|---|---|---|---|---|
| | # | % | # | % | # | % |
| Severe Headaches and Fever | 177 | 100.0 | 155 | 98.7 | 332 | 99.4 |
| Persistent and dry cough | 171 | 96.6 | 151 | 96.2 | 322 | 99.4 |
| Difficulty breathing or shortness of breath | 168 | 94.9 | 150 | 95.5 | 318 | 95.2 |
| Abdominal pain | 48 | 27.1 | 35 | 22.3 | 83 | 24.9 |
| Diarrhea and vomiting | 56 | 31.6 | 58 | 36.9 | 114 | 34.1 |
| Night sweats | 31 | 17.5 | 29 | 18.5 | 60 | 17.9 |
| Running nose and catarrh | 124 | 70.1 | 109 | 69.4 | 233 | 69.8 |
| Loss of taste and smell | 148 | 83.6 | 129 | 82.2 | 277 | 82.9 |
| Sore throat | 149 | 84.2 | 132 | 84.1 | 281 | 84.1 |

*Source: field data*

Similarly, knowledge of prevention of COVID-19 was similar across states and sex as presented in tables 12 and 13. More than 90% mentioned regular use of face masks, regular handwashing with soap and water, use of alcohol-based hand sanitizers, avoiding the crowd, and respiratory hygiene as effective preventive measures against COVID-19.

*(Funding for this work has come from the EMERGE project (Bill and Melinda Gates Foundation Grants: OPP1163682/INV-010695 and INV018007; PI Anita Raj)*

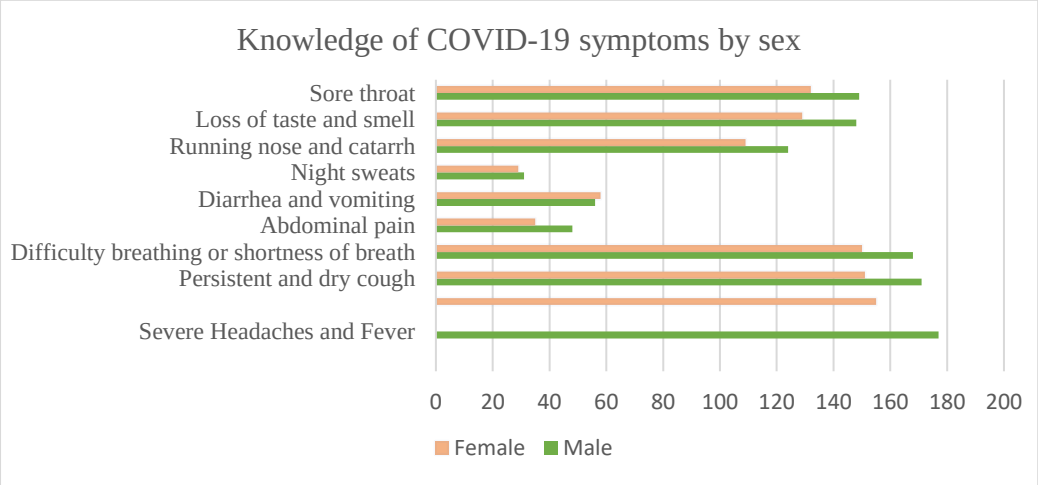


**Figure 3: Knowledge of symptoms of COVID-19 by sex**

**Table 12: Knowledge of prevention of COVID-19 by state**

| Knowledge of prevention of COVID-19 | Gombe | | Katsina | | Zamfara | | Total | |
|---|---|---|---|---|---|---|---|---|
| | # | % | # | % | # | % | # | % |
| Regular use of face mask | 113 | 100 | 100 | 99.0 | 118 | 98.3 | 331 | 99.1 |
| Regular handwashing with soap and water | 113 | 100 | 96 | 95 | 118 | 98.3 | 327 | 97.9 |
| Use of alcohol-based hand sanitizer | 111 | 98.2 | 93 | 92.1 | 112 | 93.3 | 316 | 94.6 |
| Avoiding crowded places Practicing respiratory hygiene | 111 | 98.2 | 100 | 99.0 | 110 | 91.7 | 321 | 96.1 |

*Source: field data*

**Table 13: Knowledge of prevention of COVID-19 by sex**

| Knowledge of prevention of COVID-19 | Male | | Female | | Total | |
|---|---|---|---|---|---|---|
| | # | % | # | % | # | % |
| Regular use of face mask | 176 | 99.4 | 155 | 98.7 | 331 | 99.1 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Regular handwashing with soap and water | 173 | 97.7 | 154 | 98.1 | 327 | 97.9 |
| Use of alcohol-based hand sanitizer | 166 | 93.8 | 150 | 95.5 | 316 | 94.6 |
| Avoiding crowded places Practicing respiratory hygiene | 170 | 96.0 | 151 | 96.2 | 321 | 96.1 |

*Source: field data*

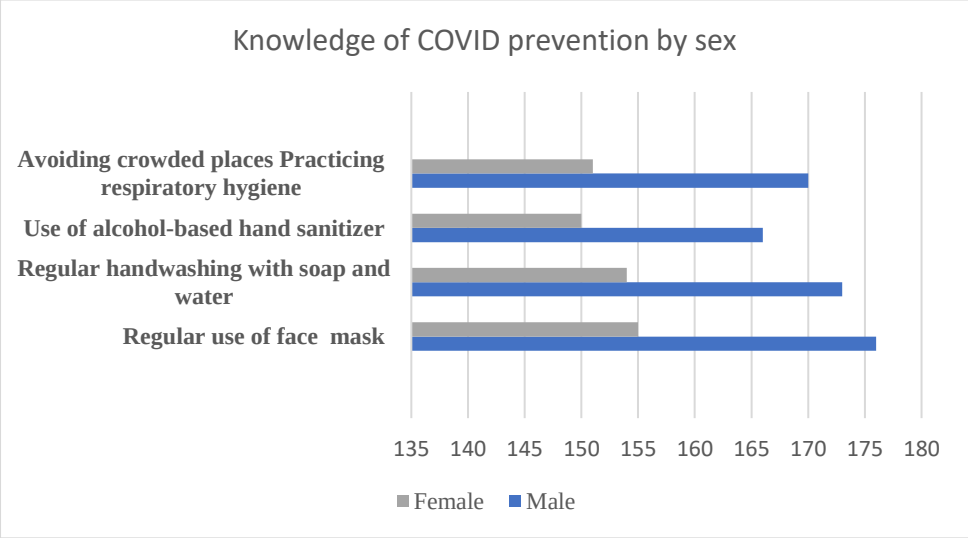


**Figure 4: Knowledge of prevention of COVID-19 by sex**

## Health Facility Response to COVID-19

The study elicited information on health facility response to COVID-19. In addition, information was elicited on the availability of COVID-19 Information, Education, and Communication (IEC) materials, training on Infection Prevention, information sharing, and availability of prevention commodities. Findings are presented in tables 14 to 19.

All facilities in Gombe state provided IEC materials on COVID-19, while all but one facility in both Katsina and Zamfara states provided IEC materials.

**Table 14: Availability of COVID-19 IEC materials by location**

| Availability of COVID-19 IEC materials | Gombe | | Katsina | | Zamfara | | Total | |
|---|---|---|---|---|---|---|---|---|
| | # | % | # | % | # | % | # | % |
| Yes | 113 | 100 | 100 | 99.0 | 119 | 99.2 | 332 | 99.4 |
| No | 0 | 0 | 1 | 0.9 | 1 | 0.8 | 2 | 0.6 |
| Total | 113 | 100 | 101 | 99.9 | 120 | 100 | 334 | 100 |

*Source: field data*

On the provision of training on COVID-19 risk reduction, 92% of facilities in Gombe state provided training to health workers compared to 96% of facilities in Katsina and 69% in Zamfara states**.**

**Table 15: Training on COVID-19 risk reduction by location**

| Received training on COVID-19 risk reduction | Gombe | | Katsina | | Zamfara | | Total | |
|---|---|---|---|---|---|---|---|---|
| | # | % | # | % | # | % | # | % |
| Yes | 104 | 92.0 | 97 | 96.0 | 83 | 69.2 | 284 | 85.0 |
| No | 9 | 7.8 | 4 | 4.0 | 37 | 30.8 | 50 | 15.0 |
| Total | 113 | 100 | 101 | 100 | 120 | 100 | 334 | 100 |

*Source: field data*

On whether staff received training on risk reduction, 88% and 82% of male and female respondents received training on COVID-19 risk reduction.

**Table 16: Training on COVID-19 risk reduction by sex**

| Received training on COVID-19 risk reduction | Male | | Female | | Total | |
|---|---|---|---|---|---|---|
| | # | % | # | % | # | % |
| Yes | 155 | 87.6 | 129 | 82.2 | 284 | 85.0 |
| No | 22 | 12.4 | 28 | 17.8 | 50 | 15.0 |
| Total | 177 | 100 | 157 | 100 | 334 | 100 |

*Source: field data*

All facilities in Gombe state provided information on COVID-19 to patients, while all but one facility in both Katsina and Zamfara states provided information on COVID-19 to patients.

**Table 17: COVID-19 information sharing to patients by location**

| COVID-19 information sharing to patients | Gombe | | Katsina | | Zamfara | | Total | |
|---|---|---|---|---|---|---|---|---|
| | # | % | # | % | # | % | # | % |
| Yes | 113 | 100 | 100 | 99.0 | 120 | 100 | 333 | 99.7 |
| No | 0 | 0 | 1 | 0.9 | 0 | 0 | 1 | 0.3 |
| Total | 113 | 100 | 101 | 99.9 | 120 | 100 | 334 | 100 |

*Source: field data*

Furthermore, all-female respondents interviewed provided information on COVID-19 to patients.

**Table 18: COVID-19 information sharing by sex**

| COVID-19 information sharing to patients | Male | Female | Total |
|---|---|---|---|

| | # | % | # | % | # | % |
|---|---|---|---|---|---|---|
| Yes | 176 | 99.4 | 157 | 100 | 333 | 99.7 |
| No | 1 | 0.6 | 0 | 0 | 1 | 0.3 |
| Total | 177 | 100 | 157 | 100 | 334 | 100 |

*Source: field data*

More than 90% of respondents reported the availability of face masks and hand sanitizers across the three states.

**Table 19: Availability of prevention commodities by location**

| Availability of prevention commodities | Gombe | | Katsina | | Zamfara | | Total | |
|---|---|---|---|---|---|---|---|---|
| | # | % | # | % | # | % | # | % |
| Facemasks | 99 | 87.6 | 101 | 100 | 104 | 86.7 | 304 | 91.0 |
| Hand sanitizers | 106 | 93.8 | 101 | 100 | 95 | 79.1 | 303 | 90.7 |

*Source: field data*

## Frequency of contact with suspected COVID-19 cases

The study elicited information on the frequency of contact with people suspected to have COVID-19. About 98% of respondents mentioned that they frequently have contact with COVID-19 suspects in the line of their work, as presented in table 20.

**Table 20: Frequency of contact with patients suspected of COVID-19 by location**

| Frequency of contact with patients suspected of COVID-19 | Gombe | | Katsina | | Zamfara | | Total | |
|---|---|---|---|---|---|---|---|---|
| | # | % | # | % | # | % | # | % |
| Always | 17 | 15.0 | 10 | 9.9 | 7 | 5.8 | 34 | 10.2 |
| Frequent | 96 | 85.0 | 88 | 87.1 | 110 | 91.7 | 294 | 88.0 |
| Never | 0 | 0 | 1 | 0.9 | 3 | 2.5 | 4 | 1.2 |
| Unknown | 0 | 0 | 2 | 1.9 | 0 | 0 | 2 | 0.6 |
| Total | 113 | 100 | 101 | 100 | 120 | 100 | 334 | 100 |

*Source: field data*

The frequency of exposure among male and female health workers was similar, as presented in table 21. Thus, almost all the male and female respondents consistently or frequently have contact with suspected COVID-19 cases.

**Table 21: Frequency of contact with patients suspected of COVID-19 by sex**

| Frequency of contact with patients suspected of COVID-19 | Male | | Female | | Total | |
|---|---|---|---|---|---|---|
| | # | % | # | % | # | % |
| Always | 23 | 6.9 | 11 | 3.3 | 34 | 10.2 |
| Frequent | 151 | 45.2 | 143 | 42.8 | 294 | 88.0 |
| Never | 1 | 0.3 | 3 | 0.9 | 4 | 1.2 |
| Unknown | 0 | 0 | 2 | 0.6 | 2 | 0.6 |
| Total | 177 | 52.4 | 157 | 47.6 | 334 | 100 |

*Source: field data*

## Perception of the impact of COVID-19 on health service provision and trust in providers

This section examines healthcare workers' perceptions on the impact of COVID-19 on Health Service Provision and trust in providers. The majority of respondents (94%) agreed or strongly agreed to have a personal risk of being infected with COVID-19 from going to work, as presented in table 22.

**Table 22: Personal risk perception of infection from going to work by location**

| Personal risk perception of infection from going to work | Gombe | | Katsina | | Zamfara | | Total | |
|---|---|---|---|---|---|---|---|---|
| | # | % | # | % | # | % | # | % |
| Strongly agree | 71 | 62.8 | 48 | 47.5 | 94 | 78.3 | 213 | 63.8 |
| Agree | 40 | 35.4 | 39 | 38.6 | 21 | 17.5 | 100 | 29.9 |
| Not sure | 0 | 0 | 2 | 1.9 | 2 | 1.7 | 4 | 1.2 |
| Disagree | 1 | 0.9 | 7 | 6.9 | 3 | 2.5 | 11 | 3.3 |
| Strongly disagree | 0 | 0 | 5 | 4.9 | 0 | 0 | 5 | 1.5 |
| Total | 112 | 99.1 | 101 | 100 | 120 | 100 | 333 | 99.7 |

*Source: field data*

About 94% of male respondents believed they have a personal risk of infection from work compared to 93% of female respondents, as presented in table 23.

**Table 23: Personal risk perception of infection from going to work by sex**

| Personal risk perception of infection from going to work | Male | | Female | | Total | |
|---|---|---|---|---|---|---|
| | # | % | # | % | # | % |
| Strongly agree | 118 | 66.7 | 95 | 60.5 | 213 | 63.8 |
| Agree | 50 | 28.2 | 51 | 32.5 | 101 | 29.9 |
| Not sure | 1 | 0.6 | 3 | 1.9 | 4 | 1.2 |
| Disagree | 5 | 2.8 | 6 | 3.8 | 11 | 3.3 |
| Strongly disagree | 3 | 1.7 | 2 | 1.3 | 5 | 1.5 |
| Total | 177 | 100 | 157 | 100 | 334 | 100 |

*Source: field data*

Furthermore, almost half of respondents 47% agreed or strongly agreed that their willingness to go to work was affected by COVID-19 compared to 49% who disagreed or strongly disagreed. The response was similar across states. However, fewer respondents in Zamfara and no respondent in Gombe state strongly agreed that their willingness to go to work was affected by COVID-19 compared to other states, as presented in Table 24.

**Table 24: Opinion on whether the willingness to go to work is affected by COVID-19 pandemic by location**

| Willingness to go to work is affected by the COVID-19 pandemic | Gombe | | Katsina | | Zamfara | | Total | |
|---|---|---|---|---|---|---|---|---|
| | # | % | # | % | # | % | # | % |
| Strongly agree | 14 | 12.4 | 26 | 25.7 | 32 | 26.7 | 72 | 21.5 |
| Agree | 24 | 21.2 | 35 | 34.7 | 26 | 21.7 | 85 | 25.4 |
| Not sure | 4 | 3.5 | 1 | 0.9 | 7 | 5.8 | 12 | 3.6 |
| Disagree | 70 | 61.9 | 31 | 30.7 | 48 | 40.0 | 149 | 44.6 |
| Strongly disagree | 0 | 0 | 8 | 7.9 | 7 | 5.8 | 15 | 4.5 |
| Total | 112 | 99.5 | 101 | 100 | 120 | 100 | 333 | 99.4 |

*Source: field data*

When response on if willing to go to work was affected by COVID-19 was compared by sex, 44% of male respondents agreed or strongly agreed that their willingness to go to work was affected by COVID-19 compared to 50% among female respondents, as presented in Table 25. However, the proportion of males and females who disagree were similar.

*(Funding for this work has come from the EMERGE project (Bill and Melinda Gates Foundation Grants: OPP1163682/INV-010695 and INV018007; PI Anita Raj)*

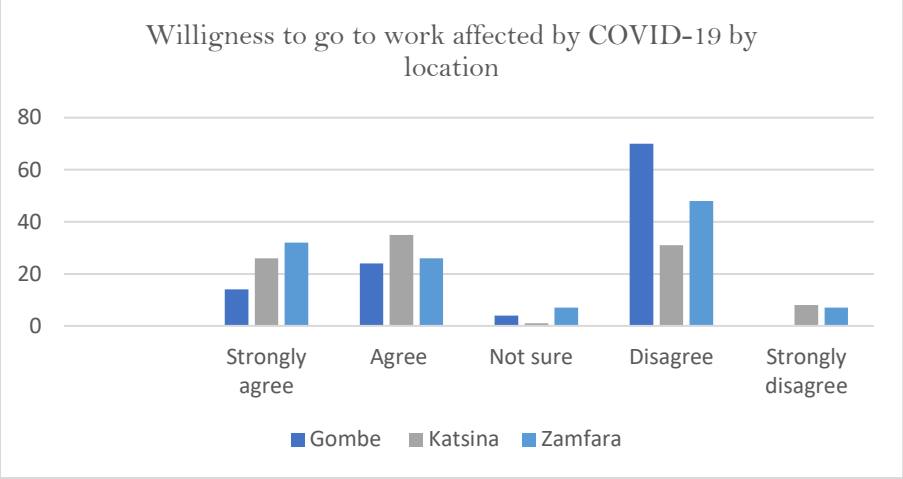


**Figure 5: Willingness to go to work affected by COVID-19 across states**

**Table 25: Opinion on whether the willingness to go to work is affected by COVID-19 pandemic by sex**

| Willingness to go to work is affected by the COVID-19 pandemic | **Male** | | **Female** | | **Total** | |
|---|---|---|---|---|---|---|
| | # | % | # | % | # | % |
| Strongly agree | 30 | 16.9 | 42 | 26.8 | 72 | 21.5 |
| Agree | 48 | 27.1 | 37 | 23.6 | 85 | 25.4 |
| Not sure | 5 | 2.8 | 7 | 4.5 | 12 | 3.6 |
| Disagree | 82 | 46.3 | 67 | 42.7 | 149 | 44.6 |
| Strongly disagree | 11 | 6.2 | 4 | 2.5 | 15 | 4.5 |
| Total | 177 | 100 | 157 | 100 | 333 | 99.4 |

*Source: field data*

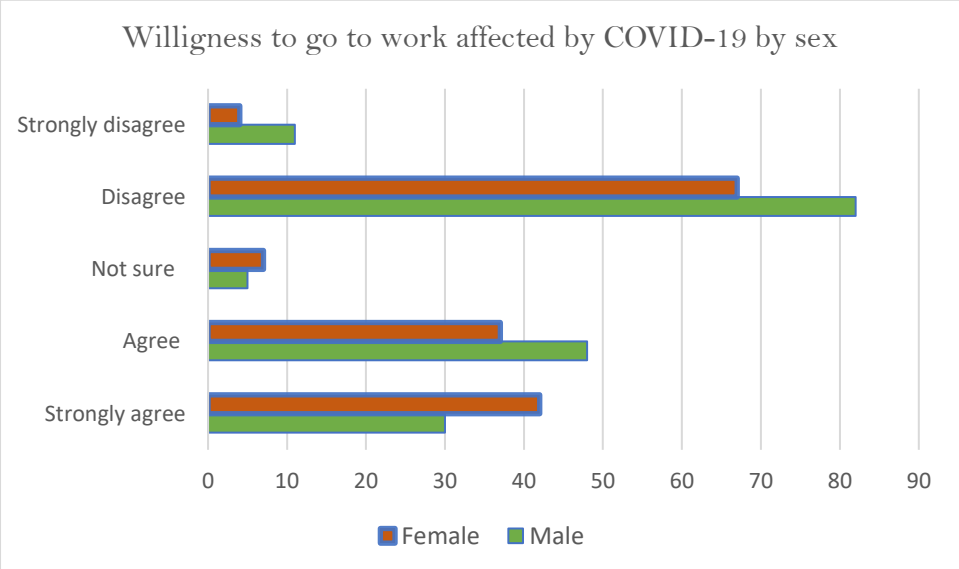


**Figure 6: Willingness to go to work affected by COVID-19 by sex**

The number of days in a week most respondents went to work ranged from five to seven days, with 35% male health workers working for seven days compared to 15% female health workers working for the same number of days, as presented in table 26.

**Table 26: Number of days a week respondent go to work since the beginning of COVID-19 pandemic by sex.**

| Number of days a week respondent go to work since the beginning of COVID-19 pandemic | **Male** | | **Female** | | **Total** | |
|---|---|---|---|---|---|---|
| | # | % | # | % | # | % |
| Less than 5 days | 5 | 2.8 | 2 | 1.3 | 7 | 0 |
| Five | 90 | 50.8 | 119 | 75.8 | 209 | 62.6 |
| Six | 20 | 11.3 | 13 | 8.3 | 33 | 9.9 |
| Seven | 62 | 35.0 | 23 | 14.6 | 85 | 25.4 |
| Total | 177 | 100 | 157 | 100 | 334 | 100 |

*Source: field data*

On the possibility of getting COVID-19 infection in the health facility, 98% of respondents from Gombe state agreed and strongly agreed that there is a high risk of getting COVID-19 infection from their health facility compared to 87% in Katsina and 98% in Zamfara who reported similar possibility**,** as presented in Table 27.

**Table 27: Possibility of getting COVID-19 infection in the health facility by location**

| Possibility of getting COVID-19 infection in the health facility | **Gombe** | | **Katsina** | | **Zamfara** | | **Total** | |
|---|---|---|---|---|---|---|---|---|
| | # | % | # | % | # | % | # | % |
| Strongly agree | 71 | 62.8 | 46 | 45.6 | 93 | 77.5 | 210 | 62.8 |
| Agree | 40 | 35.4 | 42 | 41.6 | 25 | 20.8 | 107 | 32.0 |
| Not sure | 1 | 0.9 | 1 | 0.9 | 1 | 0.8 | 3 | 0.9 |
| Disagree | 1 | 0.9 | 5 | 4.9 | 0 | 0 | 6 | 1.8 |
| Strongly disagree | 0 | 0 | 7 | 6.9 | 1 | 0.8 | 8 | 2.4 |
| Total | 113 | 100 | 101 | 100 | 120 | 100 | 334 | 100 |

*Source: field data*

Overall, 96% of male respondents agreed and strongly agreed to the possibility of contracting COVID-19 in their hospital compared to 94% of female respondents who held the same belief, as presented in table 28.

**Table 28: Possibility of getting COVID-19 infection in the health facility by sex**

| Possibility of getting COVID-19 infection in the health facility | Male | | Female | | Total | |
|---|---|---|---|---|---|---|
| | # | % | # | % | # | % |
| Strongly agree | 117 | 66.1 | 93 | 59.2 | 210 | 62.8 |
| Agree | 53 | 29.9 | 54 | 34.4 | 107 | 32.0 |
| Not sure | 1 | 0.6 | 2 | 1.3 | 3 | 0.9 |
| Disagree | 3 | 1.7 | 3 | 1.9 | 6 | 1.8 |
| Strongly disagree | 3 | 66.1 | 5 | 3.2 | 8 | 2.4 |
| Total | 177 | 100 | 157 | 100 | 334 | 100 |

*Source: field data*

## Health facility patronage

Opinion of health workers on the use of health facilities by community members during COVID-19 pandemic is reported as follows. About 28% of health workers from Gombe state agreed that community people do not frequently come for health care for fear of contracting COVID-19. Similarly, 43% from Katsina state and 47% from Zamfara state had similar responses. Overall, 39% of health workers across the three states agreed that community members do not frequently come for health care for fear of contracting COVID-19, as presented in Table 29.

**Table 29: Community people do not frequently come for health care for fear of COVID-19 infection by location**

| Community people do not frequently come for health care for fear of COVID infection. | Gombe | | Katsina | | Zamfara | | Total | |
|---|---|---|---|---|---|---|---|---|
| | # | % | # | % | # | % | # | % |
| Strongly agree | 3 | 2.7 | 19 | 18.8 | 51 | 42.5 | 73 | 21.8 |
| Agree | 32 | 28.3 | 43 | 42.6 | 56 | 46.7 | 131 | 39.2 |
| Not sure | 15 | 13.3 | 1 | 0.9 | 6 | 5 | 22 | 6.6 |
| Disagree | 61 | 53.9 | 27 | 26.7 | 7 | 5.8 | 95 | 28.4 |
| Strongly disagree | 1 | 0.9 | 11 | 10.9 | 0 | 0 | 12 | 3.6 |
| Total | 113 | 100 | 101 | 100 | 120 | 100 | 334 | 100 |

*Source: field data*

The opinion that the community does not frequently come for health care for fear of contracting COVID-19 was similar among male and female respondents. About 72% of males agreed or strongly agreed that community people do not frequently come for health care for fear of contracting COVID-19, 75% of female respondents had a similar opinion, as presented in Table 30.

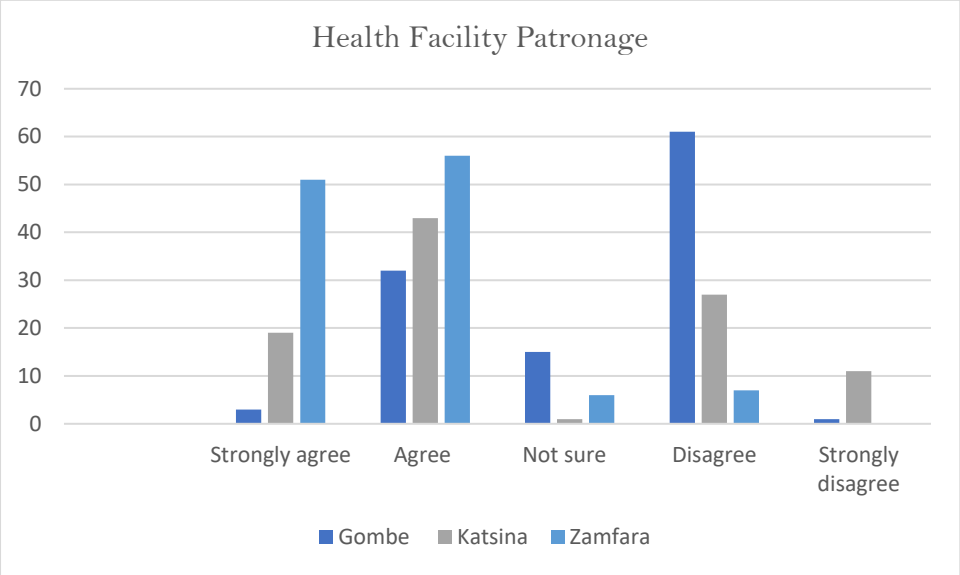


**Figure 7: Health workers perception of health facility patronage by across the states**

**Table 30: Community people do not frequently come for health care for fear of COVID-19 infection by sex**

| Community people do not frequently come for health care for fear of COVID infection. | Male | | Female | | Total | |
|---|---|---|---|---|---|---|
| | # | % | # | % | # | % |
| Strongly agree | 42 | 23.7 | 32 | 20.4 | 74 | 21.9 |
| Agree | 76 | 48.4 | 55 | 35.0 | 131 | 39.2 |
| Not sure | 9 | 5.7 | 13 | 8.3 | 22 | 6.6 |
| Disagree | 46 | 29.3 | 49 | 31.2 | 95 | 28.4 |
| Strongly disagree | 4 | 2.5 | 8 | 5.1 | 12 | 3.6 |
| Total | 177 | 100 | 157 | 100 | 334 | 100 |

*Source: field data*

## Worry about health care systems ability to treat COVID-19 cases

Overall, 75% of respondents across the three states were worried that there are not enough staff and health facilities to manage COVID-19 cases in their state. Also, 64% of respondents believed there is a lack of protective equipment for health providers. However, 60% of respondents believed people who need COVID-19 treatment would get care. The opinion of respondents on the state of the health care system is presented in Table 31.

Table 31: Worried about the health care system's ability to help those with COVID-19 in your community for any of the following reasons by location

| Worried about the health care system's ability to help those with COVID-19 in your community for any of the following reasons | **Gombe** | | **Katsina** | | **Zamfara** | | **Total** | |
|---|---|---|---|---|---|---|---|---|
| | # | % | # | % | # | % | # | % |
| 1. There are not enough staff and health facilities | 93 | 82.3 | 49 | 48.5 | 107 | 89.2 | 249 | 74.6 |
| 2. There is a lack of protective equipment for health providers | 63 | 55.8 | 38 | 37.6 | 111 | 92.5 | 212 | 63.5 |
| 3. COVID-19 patients do not seek care since they are afraid of spreading infection at the facilities | 63 | 55.8 | 34 | 33.7 | 86 | 71.7 | 183 | 54.8 |
| 4. COVID-19 patients do not seek care because they cannot get to the clinic because of the social restrictions in place | 17 | 15.0 | 27 | 26.7 | 83 | 69.2 | 127 | 38.0 |
| 5. COVID-19 patients do not get care because the doctors and nurses are not available because they are afraid of COVID-19 | 8 | 7.1 | 11 | 10.9 | 31 | 25.8 | 50 | 15.0 |
| 6. Poor people will die because they cannot afford to get the care they need. | 12 | 10.6 | 64 | 63.4 | 2 | 1.7 | 78 | 23.4 |
| 7. I am not worried; people who need it will get health care. | 81 | 71.7 | 86 | 85.1 | 33 | 27.5 | 200 | 59.9 |

*Source: field data*

Similarly, 48.5% of respondents were worried about the health care system's ability to help community members with health care issues other than COVID-19 because health care is only being directed to COVID-19 and no other concerns. Also, 34% believed that patients would not seek care since they are afraid of getting infected with COVID-19 at the facilities. The distribution of response across states is provided in Table 32.

*(Funding for this work has come from the EMERGE project (Bill and Melinda Gates Foundation Grants: OPP1163682/INV-010695 and INV018007; PI Anita Raj)*

**Table 32: Worried about the health care system's ability to help those in your community with health care issues other than COVID-19 by location**

| Worried about the health care system's ability to help those in your community with health care issues other than COVID-19 for any of the following reasons | Gombe | | Katsina | | Zamfara | | Total | |
|---|---|---|---|---|---|---|---|---|
| | # | % | # | % | # | % | # | % |
| 1. Health care is only being directed to COVID-19, and no other concerns | 52 | 46.0 | 28 | 27.7 | 82 | 63.3 | 162 | 48.5 |
| 2. Patients will not seek care since they are afraid of getting infected with Corona Virus (COVID-19) at the facilities | 16 | 14.2 | 22 | 21.8 | 77 | 64.2 | 115 | 34.4 |
| 3. Patients do not get care because the doctors and nurses are not available because they are afraid of COVID-19 | 3 | 2.7 | 10 | 9.9 | 40 | 33.3 | 53 | 15.9 |

*Source: field data*

On the distribution of response by sex, 54% of male respondents were worried about the health care system's ability to help community members with health care issues other than COVID-19 because health care is only being directed to COVID-19 and no other concerns, compared to 43% of female respondents with the same opinion. The distribution of respondents' opinions by sex is presented in table 33.

**Table 33: worried about the health care system's ability to help those in your community with health care issues other than COVID-19 for any of the following reasons by sex**

| Worried about the health care system's ability to help those in your community with health care issues other than COVID-19 for any of the following reasons | Male | | Female | | Total | |
|---|---|---|---|---|---|---|
| | # | % | # | % | # | % |
| 1. Health care is only being directed to COVID-19 and no other concerns | 95 | 53.7 | 67 | 42.7 | 162 | 48.5 |
| 2. Patients will not seek care since they are afraid of getting infected with Corona Virus (COVID-19) at the facilities | 65 | 36.7 | 50 | 31.8 | 115 | 34.4 |
| 3. Patients do not get care because the doctors and nurses are not available because they are afraid of COVID-19 | 31 | 17.5 | 22 | 14.0 | 53 | 15.9 |

*Source: field data*

*(Funding for this work has come from the EMERGE project (Bill and Melinda Gates Foundation Grants: OPP1163682/INV-010695 and INV018007; PI Anita Raj)*

## Perception of community opinion about health workers

Given the situation with the COVID-19 pandemic, overall about 89% of respondents mentioned that community members believe health workers care about them and the community's needs, 83% of respondents mentioned that community members believe health workers will be considerate of patients' needs. Furthermore, 82% believes communities can trust them and would follow their advice while 70% thinks that communities can trust them to get the best possible care. Distribution of community opinion about health workers by state and sex is provided in tables 34 and 35, respectively.

**Table 34: Given the situation with the COVID-19 pandemic, how much do people in your community feel the following about health workers at this time by location**

| Given the situation with the COVID-19 pandemic, how much do people in your community feel the following about health workers at this time? | Gombe | | Katsina | | Zamfara | | Total | |
|---|---|---|---|---|---|---|---|---|
| | # | % | # | % | # | % | # | % |
| 1. They believe the health workers care about them and the needs of the community | 100 | 88.5 | 94 | 93.1 | 103 | 85.8 | 297 | 88.9 |
| 2. They believe the health worker will be considerate of patient needs | 85 | 75.2 | 87 | 86.1 | 104 | 86.7 | 278 | 83.2 |
| 3. They trust the health worker and follow his/her advice | 89 | 78.8 | 85 | 84.2 | 99 | 82.5 | 273 | 81.7 |
| 4. They trust the health worker's judgment about their health issues | 91 | 80.5 | 83 | 82.2 | 91 | 75.8 | 265 | 79.3 |
| 5. They believe that the health workers will ensure they get the best possible care | 77 | 68.1 | 86 | 85.1 | 70 | 58.3 | 233 | 69.8 |

*Source: field data*

**Table 35: Given the situation with the COVID-19 pandemic, how much do people in your community feel the following about health workers at this time by sex**

| Given the situation with the COVID-19 pandemic, how much do people in your community feel the following about health workers at this time? | Male | | Female | | Total | |
|---|---|---|---|---|---|---|
| | # | % | # | % | # | % |
| 1. They believe the health workers care about them and the needs of the community | 161 | 91.0 | 136 | 86.6 | 297 | 88.9 |
| 2. They believe the health worker will be considerate of patient needs | 152 | 85.9 | 124 | 79.0 | 276 | 83.2 |
| 3. They trust the health worker and follow his/her advice | 145 | 81.9 | 128 | 81.5 | 273 | 81.7 |
| 4. They trust the health worker's judgment about their health issues | 138 | 78.0 | 127 | 80.9 | 265 | 79.3 |
| 5. They believe that the health workers will ensure they get the best possible care | 121 | 68.4 | 112 | 76.2 | 233 | 69.8 |

*Source: field data*

Furthermore, 92% of female respondents believed they are viewed respectfully or very respectfully. Also, 73% believed the respect has increased since the onset of COVID-19 in the state. The distribution of response across states is presented in tables 36 and 37.

**Table 36: How do men in your village view you?**

| How do men in your village view you | Gombe | | Katsina | | Zamfara | | Total | |
|---|---|---|---|---|---|---|---|---|
| | # | % | # | % | # | % | # | % |
| Very respectfully | 48 | 42.5 | 60 | 59.4 | 65 | 54.2 | 173 | 51.8 |
| Respectfully | 55 | 48.7 | 36 | 35.6 | 45 | 37.2 | 136 | 40.7 |
| Normal as other women | 4 | 3.5 | 3 | 3.0 | 6 | 5.0 | 13 | 3.9 |
| Not so respectfully | 5 | 4.4 | 0 | 0 | 0 | 0 | 5 | 1.5 |
| Disgracefully | 1 | 0.9 | 2 | 2.0 | 4 | 3.3 | 7 | 2.1 |
| Total | 113 | 100 | 101 | 100 | 120 | 100 | 334 | 100 |

*Source: field data*

**Table 37: Has respect from men in the village increased, decreased, or stayed the same since the COVID-19 pandemic?**

| Has respect from men in the village increased, decreased, or stayed the same since the COVID-19 pandemic | Gombe | | Katsina | | Zamfara | | Total | |
|---|---|---|---|---|---|---|---|---|
| | # | % | # | % | # | % | # | % |
| Increased | 83 | 73.5 | 74 | 73.3 | 85 | 70.8 | 242 | 72.5 |
| Decreased | 8 | 7.1 | 7 | 6.9 | 3 | 2.5 | 18 | 5.4 |
| Stayed the same | 22 | 19.5 | 20 | 19.8 | 32 | 26.7 | 74 | 22.2 |
| Total | 113 | 100 | 101 | 100 | 120 | 100 | 334 | 100 |

*Source: field data*

## Health worker's ability to manage care work and household tasks in COVID-19 situation

About 91% of respondents agreed or strongly agreed that their healthcare providers' tasks had significantly increased since the COVID-19 pandemic. The distribution of response across states is presented in table 38.

**Table 38: My tasks in health care provision significantly increased greatly since COVID-pandemic by location**

| My tasks in health care provision have increased dramatically since COVID-pandemic. | Gombe | | Katsina | | Zamfara | | Total | |
|---|---|---|---|---|---|---|---|---|
| | # | % | # | % | # | % | # | % |
| Strongly agree | 43 | 38.1 | 63 | 62.4 | 59 | 49.2 | 165 | 49.4 |
| Agree | 62 | 54.9 | 32 | 31.7 | 46 | 38.3 | 140 | 41.9 |
| Not sure | 2 | 1.8 | 2 | 2.0 | 5 | 4.2 | 9 | 2.7 |
| Disagree | 6 | 5.3 | 3 | 3.0 | 10 | 8.3 | 19 | 5.7 |
| Strongly disagree | 0 | 0 | 1 | 1.0 | 0 | 0 | 1 | 0.3 |
| Total | 113 | 100 | 101 | 100 | 120 | 100 | 334 | 100 |

*Source: field data*

Furthermore, the distribution of response to changes in healthcare provision tasks across sex is presented in table 39. Again, a similar proportion of male and female respondents reported an increase in healthcare provision tasks.

*(Funding for this work has come from the EMERGE project (Bill and Melinda Gates Foundation Grants: OPP1163682/INV-010695 and INV018007; PI Anita Raj)*

**Table 39: My tasks in health care providers increased significantly since COVID-pandemic by sex**

| My tasks in health care provision have increased significantly since COVID-pandemic. | Male | | Female | | Total | |
|---|---|---|---|---|---|---|
| | # | % | # | % | # | % |
| Strongly agree | 93 | 52.5 | 72 | 45.9 | 165 | 49.4 |
| Agree | 69 | 39.0 | 71 | 45.2 | 140 | 41.9 |
| Not sure | 5 | 2.8 | 4 | 2.5 | 9 | 2.7 |
| Disagree | 10 | 5.6 | 9 | 5.7 | 19 | 5.7 |
| Strongly disagree | 0 | 0.0 | 1 | 0.6 | 0 | 0.3 |
| Total | 177 | 100 | 157 | 100 | 334 | 100 |

*Source: field data*

In addition, 70% of respondents reported an increase in household tasks like cleaning, cooking, and taking care of children, and washing clothes and plates, as presented in table 40.

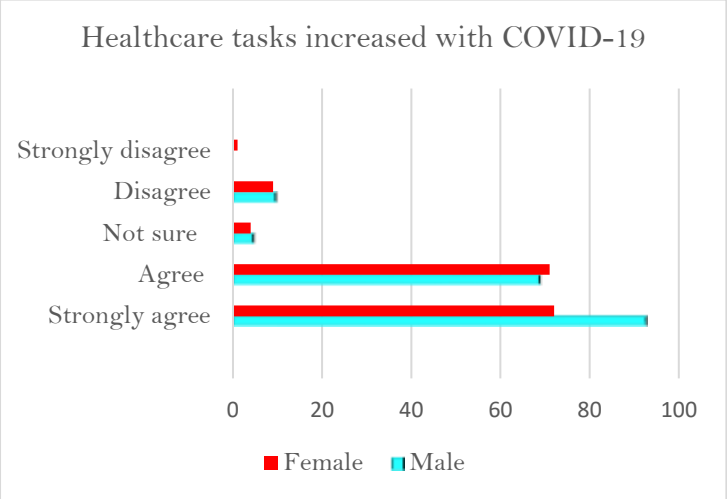


**Figure 8: Health care tasks increased with COVID-19**

**Table 40: My tasks at home, such as house cleaning, cooking, and taking care of children, and washing clothes and plates, has increased by location**

| My tasks at home, such as house cleaning, cooking, and taking care of children, and washing clothes and plates, have increased. | Gombe | | Katsina | | Zamfara | | Total | |
|---|---|---|---|---|---|---|---|---|
| | # | % | # | % | # | % | # | % |
| Strongly agree | 26 | 23.0 | 33 | 32.7 | 28 | 23.3 | 87 | 26.0 |
| Agree | 65 | 57.5 | 35 | 34.7 | 46 | 38.3 | 146 | 43.7 |
| Not sure | 6 | 5.3 | 2 | 2.0 | 16 | 13.3 | 24 | 7.2 |
| Disagree | 16 | 14.2 | 19 | 18.8 | 28 | 23.3 | 63 | 18.9 |
| Strongly disagree | 0 | 0 | 12 | 11.9 | 2 | 1.7 | 14 | 4.2 |
| Total | 113 | 100 | 101 | 100 | 120 | 100 | 334 | 100 |

*Source: field data*

However, 78% of female respondents reported an increase in household tasks like cleaning, cooking, and taking care of children, and washing clothes and plates compared to 62% of male respondents, with similar responses presented in table 41.

**Table 41: My tasks at home, such as house cleaning, cooking, and taking care of children, and washing clothes and plates, has increased by sex.**

| My tasks at home, such as house cleaning, cooking, and taking care of children, and washing clothes and plates, have increased. | Male | | Female | | Total | |
|---|---|---|---|---|---|---|
| | # | % | # | % | # | % |
| Strongly agree | 39 | 22.0 | 48 | 30.6 | 87 | 26.0 |
| Agree | 71 | 40.1 | 75 | 47.8 | 146 | 43.7 |
| Not sure | 12 | 6.8 | 12 | 7.6 | 24 | 7.2 |
| Disagree | 45 | 25.4 | 18 | 11.5 | 63 | 18.9 |
| Strongly disagree | 10 | 5.6 | 4 | 2.5 | 14 | 4.2 |
| Total | 177 | 100 | 157 | 100 | 334 | 100 |

*Source: field data*

In addition, overall, 66% of respondents reported that they do most of the housework and do not get assistance from anyone, as presented in table 42.

**Table 42: I do most of the housework and do not get assistance from anyone by location**

| I do most of the housework and do not get assistance from anyone | Gombe | | Katsina | | Zamfara | | Total | |
|---|---|---|---|---|---|---|---|---|
| | # | % | # | % | # | % | # | % |
| Strongly agree | 18 | 15.9 | 18 | 17.8 | 21 | 17.5 | 53 | 15.9 |
| Agree | 70 | 61.9 | 23 | 22.8 | 50 | 41.7 | 143 | 42.8 |
| Not sure | 1 | 0.9 | 2 | 2.0 | 10 | 8.3 | 13 | 3.9 |
| Disagree | 28 | 24.8 | 41 | 40.6 | 37 | 30.8 | 106 | 31.7 |
| Strongly disagree | 0 | 0 | 17 | 16.8 | 2 | 1.7 | 19 | 1.2 |
| Total | 113 | 100 | 101 | 199 | 120 | 100 | 334 | 100 |

*Source: field data*

However, 67% of female respondents reported doing most of the housework without receiving assistance from anyone than 51% of male respondents with a similar response as presented in table 43.

**Table 43: I do most of the housework and do not get assistance from anyone by sex**

| I do most of the housework and do not get assistance from anyone | Male | | Female | | Total | |
|---|---|---|---|---|---|---|
| | # | % | # | % | # | % |
| Strongly agree | 16 | 9.0 | 37 | 23.6 | 53 | 15.9 |
| Agree | 74 | 41.8 | 69 | 43.9 | 143 | 42.8 |
| Not sure | 8 | 4.5 | 5 | 3.2 | 13 | 3.9 |
| Disagree | 69 | 39.0 | 37 | 23.6 | 106 | 31.7 |
| Strongly disagree | 10 | 5.6 | 9 | 5.7 | 19 | 1.2 |
| Total | 177 | 100 | 157 | 100 | 334 | 100 |

*Source: field data*

Similarly, 74% of respondents feel overwhelmed combining health care work with household tasks since the onset of the COVID-19 pandemic, as presented in table 44.

*(Funding for this work has come from the EMERGE project (Bill and Melinda Gates Foundation Grants: OPP1163682/INV-010695 and INV018007; PI Anita Raj)*

**Table 44: I feel overwhelmed combining health care work with household tasks since the COVID -19 pandemic by location**

| I feel overwhelmed combining health care work with household tasks since the COVID -19 pandemic | Gombe | | Katsina | | Zamfara | | Total | |
|---|---|---|---|---|---|---|---|---|
| | # | % | # | % | # | % | # | % |
| Strongly agree | 12 | 10.6 | 21 | 20.8 | 51 | 42.5 | 84 | 25.1 |
| Agree | 82 | 72.6 | 27 | 26.7 | 38 | 31.7 | 163 | 48.8 |
| Not sure | 10 | 8.8 | 4 | 4.0 | 14 | 11.7 | 28 | 8.4 |
| Disagree | 9 | 8.0 | 27 | 26.7 | 15 | 12.6 | 51 | 15.3 |
| Strongly disagree | 0 | 0 | 6 | 5.9 | 2 | 1.7 | 8 | 2.4 |
| Total | 113 | 100 | 101 | 100 | 120 | 100 | 334 | 0 |

*Source: field data*

Also, 78% of female respondents reported feeling overwhelmed combining health care work with household tasks since the onset of the COVID-19 pandemic compared to 71% of male respondents with a similar response, as presented in table 45.

**Table 45: I feel overwhelmed combining health care work with household tasks since the COVID -19 pandemic by sex**

| I feel overwhelmed combining health care work with household tasks since the COVID -19 pandemic | Male | | Female | | Total | |
|---|---|---|---|---|---|---|
| | # | % | # | % | # | % |
| Strongly agree | 46 | 26.0 | 38 | 24.2 | 84 | 25.1 |
| Agree | 79 | 44.6 | 84 | 53.5 | 163 | 48.8 |
| Not sure | 16 | 9.0 | 12 | 7.6 | 28 | 8.4 |
| Disagree | 33 | 18.6 | 18 | 11.5 | 51 | 15.3 |
| Strongly disagree | 3 | 1.7 | 5 | 3.2 | 8 | 2.4 |
| Total | 177 | 100 | 157 | 100 | 334 | 100 |

*Source: field data*

## Discussion

In this study, 47% of the participants were male and 53% female. Nurses (40.4%) and Laboratory technicians (14.1%) were the highest participants in the study. Over 80% of respondents are married, and about 16% are single. The majority of the respondents have over ten years of experience. More than half of our respondents were drawn from tertiary health care facilities across the three states. Our findings show that HCWs have good knowledge of COVID-19; all the respondents have heard about COVID-19. However, 76.4% of respondents have good knowledge of the signs, symptoms, and prevention of COVID-19. The study's finding is comparable to a study carried out in Nigeria by (Ejeh et al., 2020) and in Sierra Leone (Kanu et al., 2021). Ninety-three percent heard from social media, while 46% heard about COVID-19 from family and friends, which is similar to the research outcome in Vietnam. Social media and friends are the primary sources of COVID-19 information (Huynh et al., 2020). The findings revealed that HCWs rely more on the social media to gain knowledge on an emerging infectious disease like COVID-19 than the government agencies.

There are no gender differences in routes of knowledge of transmission of COVID-19 across the three states. The least identified symptoms were abdominal pain and diarrhea, and vomiting, while severe headaches, fever, persistent and dry cough were the most recognized COVID-19 across the three states. The healthcare workers in the three states had good knowledge on the prevention of COVID-19; this could be attributed to the presence of IEC materials in the health care facilities that also reinforces the information gathered from the social media. All facilities in Gombe state provided IEC materials on COVID-19, while all but one facility in both Katsina and Zamfara states provided IEC materials. Ninety-two percent of facilities in Gombe state-provided training on COVID-19 reduction compared to 96% of facilities in Katsina and 69% in Zamfara states. More men have received training on COVID-19 risk reduction than women; this is because men work more days than their female counterparts; this could be attributed to the number of days that men are available at work compared to the number of days females come to work.

This study also found that most participants perceived themselves to be at risk of being infected by the virus. Similar studies in the UK and the US (Nguyen et al., 2020 & Chou et al., 2020) confirmed perception of high risk of infection among health workers. In addition, male and female HCWs have an equal risk of exposure to COVID-19, which is similar to what (Ogolodom et al., 2020) recorded in south-south Nigeria. Consequently, most participants

strongly agreed that there was a high possibility of getting the infection in the hospitals. These findings are per finding in a related study conducted by Zegarra-Valdivia et al., (2020).

The healthcare system was at a disadvantage as many HCWs strongly agreed that they were unwilling to go to work due to fears of infection in the Gombe and Katsina. In addition, more women strongly agreed that they were unwilling to go to work compared to their male counterparts. This is evident as more men worked seven days than females. About 30% of respondents from Gombe state agreed or strongly agreed that community people do not frequently come for health care for fear of contracting COVID-19 than 61% of respondents from Katsina state and 83% of respondents in Zamfara state had a similar response. Similarly, the finding is also consistent with a study carried out in Kenya (Ahmed et al., 2020). The majority of respondents across the three states were worried that there are not enough staff and health facilities to manage COVID-19 cases in their states. Bielicki et al., (2020) also stated that there is a need for an adequate staffing level as a result of the pandemic.

The majority of females HCWS from this study believe that people have more respect for them since the onset of the pandemic. They also agreed that their household choice has significantly increased since the pandemic. Over 70% of female HCWs do the house chores alone, exhausting them and leaving them overwhelmed, combining it with healthcare work. This aligns with the finding of Regenold & Vindrola-Padros, (2021). In order to be prepared for future health emergencies, it is imperative to increase funding and support for health workforce motivation and education. The need for an increased valuation of nursing and recognition and rectification of the gender biases that continue to devalue care work has been globally recognized (Regenold & Vindrola-Padros, 2021).

*(Funding for this work has come from the EMERGE project (Bill and Melinda Gates Foundation Grants: OPP1163682/INV-010695 and INV018007; PI Anita Raj)*

## Conclusion

The outbreak of the COVID19 pandemic continues to pose an unprecedented threat and a great challenge to health systems and service delivery. Women are majorly on the front line of the fight against COVID-19 in Nigeria and globally. As a result, they face a double burden like longer shifts at work and additional care work at home. Female health workers are at risk of infection in the line of duty and transference of infection to family members. The study identified the need for health facilities to ensure the provision of appropriate personal protective equipment for health workers to further keep them safe from contracting the disease and reduce the perception of the risk of infection demonstrated by health care workers. This study identified the role of women in response to the COVID-19 pandemic in Nigeria and how they work between five and seven days a week to meet up with the demand of the response and household chores. The study showed that they work as hard as their male counterparts, who are less involved in household chores. This study further emphasizes the need for households and communities to recognize the burden of the pandemic on female health workers. Reducing workload in household and health facility levels will provide significant relief to women who are already overwhelmed by combining house chores and health care provision. Finally, female health care workers and their male counterparts will benefit from shift duty that allows them to spend less time in health facilities to ensure work-life balance.

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*(Funding for this work has come from the EMERGE project (Bill and Melinda Gates Foundation Grants: OPP1163682/INV-010695 and INV018007; PI Anita Raj)*

# Annex

## 1. Ethical approval

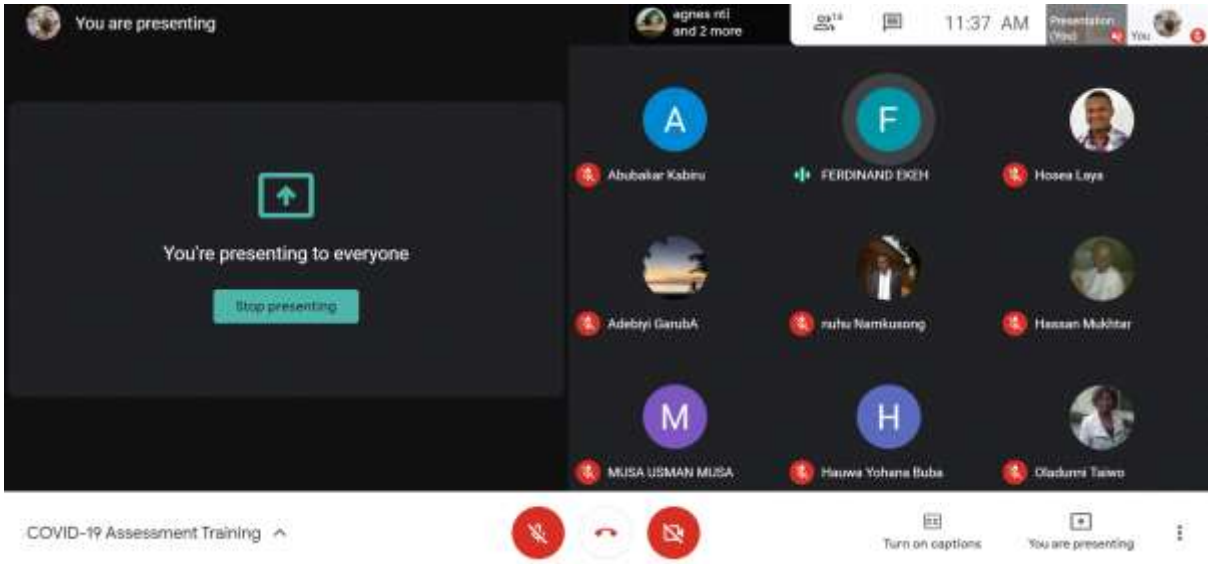


## 2. Questionnaire

*(Funding for this work has come from the EMERGE project (Bill and Melinda Gates Foundation Grants: OPP1163682/INV-010695 and INV018007; PI Anita Raj)*

Gendered impcat of COVID

### 3. Pictures form the virtual enumerators training



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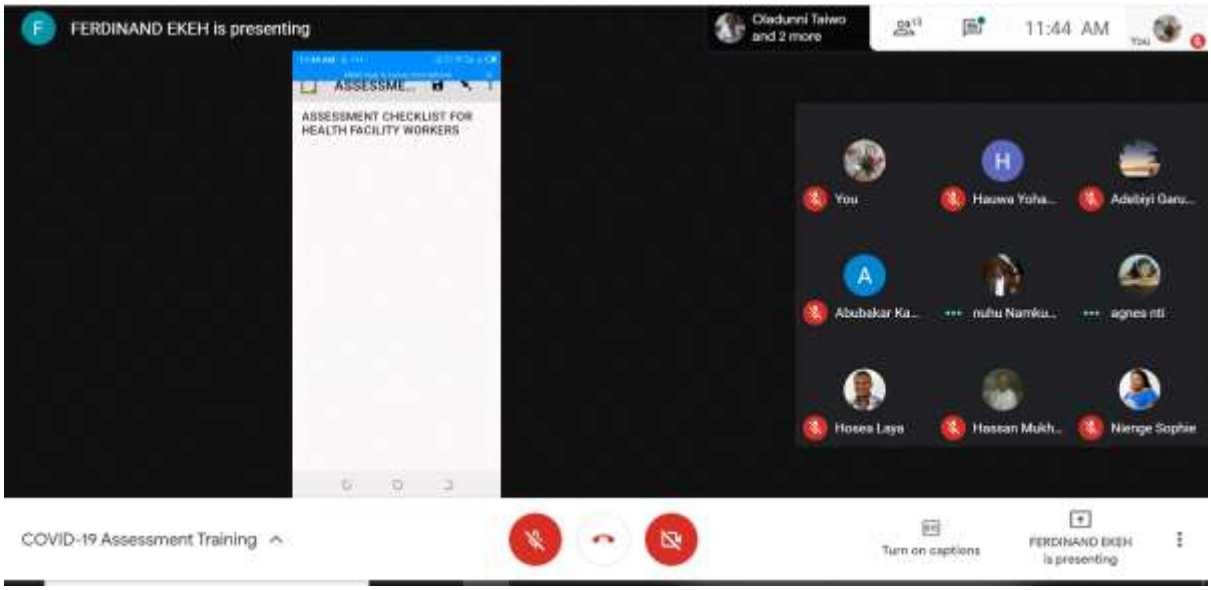


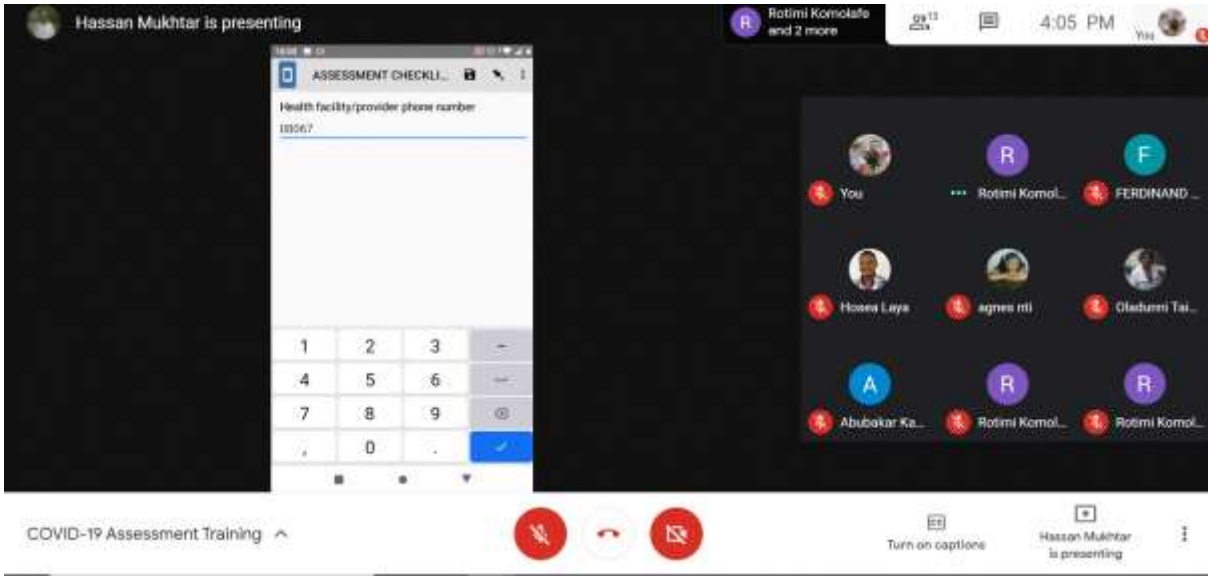


4. Field data collection pictures from Gombe , Katsina and Zamfara states

*(Funding for this work has come from the EMERGE project (Bill and Melinda Gates Foundation Grants: OPP1163682/INV-010695 and INV018007; PI Anita Raj)*