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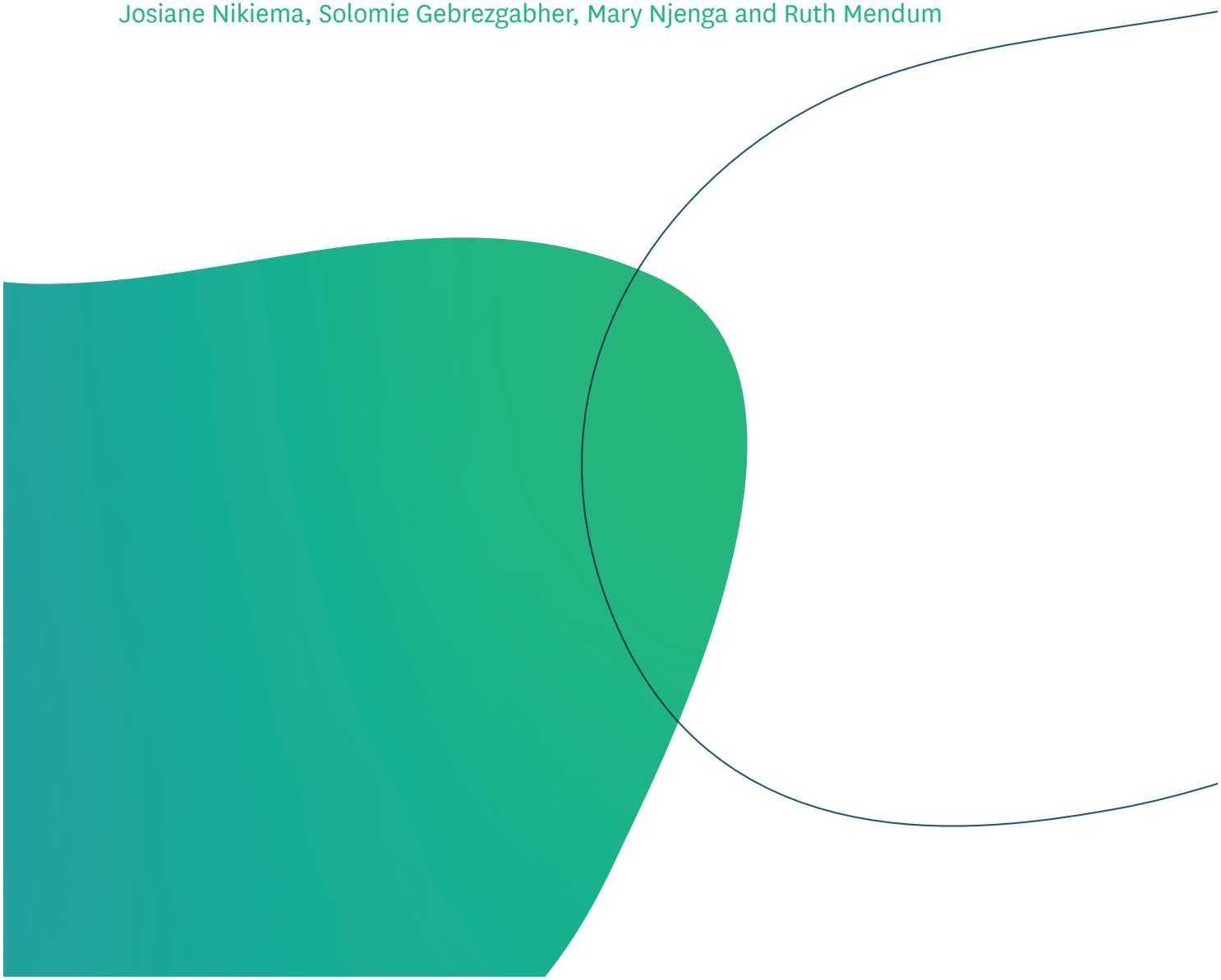
Working Paper

Gender in Water and Sanitation Provision and Responses to the COVID-19 Pandemic in Rural Ghana

Everisto Mapedza, Dorcas Adewale, Richard Seyram, George Asare, Olufunke Cofie, Josiane Nikiema, Solomie Gebrezgabher, Mary Njenga and Ruth Mendum



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Project

This study was undertaken as part of the SDG Support for Food Security and Water Resources project implemented by the International Water Management Institute (IWMI). IWMI has been involved in many aspects of the development and implementation of the United Nations Sustainable Development Goal (SDG) indicators.

Donors

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Summary

This study assessed the pressures, drivers and responses to the COVID-19 pandemic in rural Ghana in terms of gendered demand and consumption of water and sanitation. The research question was how the COVID-19 outbreak has affected water demand and sanitation, with a special focus on social inclusion and gender. Data collection was conducted through a household questionnaire survey of 146 households in Ga South District in the Greater Accra Metropolitan Area. The study area was selected as a rural area within the Greater Accra Metropolitan Area. A complementary qualitative study was conducted by a male and a female facilitation team using Focus Group Discussions disaggregated by women, men, youths and mixed groups. Key informant interviews were also conducted with both male and female respondents.

The main findings of the study are as follows:
COVID-19 impacts are gendered. Women, men, youths and children are differentially affected by COVID-19 within the study site. For instance, women and girls have a greater burden of collecting additional water, school-going children are deprived of their education and men are staying at home, increasing the risk of domestic violence. Government statistics noted that there was a 7% increase in domestic violence in areas placed under lockdown. School-going girl children were at a greater risk of pregnancy in light of increased teenage pregnancy rates in Ghana during COVID-19. Youths without employment or schooling opportunities in the COVID-19 period also experimented with alcohol due to the myth that it kills the COVID-19 virus.

Government's Free Water Initiative response has further marginalized rural citizens. The government of Ghana has rightly intervened with a Free Water Initiative as a mechanism to facilitate free access to water and avoid the risk of spreading COVID-19 within urban areas. Rural areas did not benefit from such government support. Rural households continued to pay the volume-based charges collected by the Water User Committee which uses the funds as a fund for repairing the boreholes when they break down. As a result, the initiative did not benefit the urban poor as well as rural households.

Women and girls' water collection burden has been worsened. COVID-19 entailed a requirement for increased use of water for handwashing and other hygienic purposes. Across all households, water points were away from the household compounds. Women and girls were spending more time collecting water for domestic uses beyond their compound. *Childcare roles* also increased, especially when schools were closed. The limited housing space and low levels of education for most rural parents made homeschooling even more difficult. Children-specific participatory studies led by a rapporteur on children's rights showed how low-income neighborhoods struggled in Ghana to access meaningful education during the lockdowns.

Stigma still exists for COVID-19. While there was very high knowledge of COVID-19, its signs and symptoms, both male (52%) and female (58%) respondents noted that they would be hesitant to interact with a person who had recovered from COVID-19. This highlights the stigma that the Government of Ghana and other stakeholders such as WHO have been campaigning against. This also meant that some people did not disclose their COVID-19 status. However, male respondents (11%) said they knew people who were infected, with none of the women being aware of anyone infected with COVID-19 within their own community.

Loss of income has worsened food insecurity in poor urban areas. Most of the informal opportunities were affected by the lockdown and the general decline in business as people were spending less. The study area largely depended on informal employment which was negatively affected by the pandemic resulting in food insecurity. Food shortage had a gendered dimension, with women forgoing food consumption when there was a shortage, as compared to men. **Domestic violence** was noted by about 13% of the respondents to have gone up as a result of COVID-19, especially with the loss of economic opportunities.

Gender in Water and Sanitation Provision and Responses to the COVID-19 Pandemic in Rural Ghana

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Introduction

This research assessed the pressures, drivers and responses to the COVID-19 pandemic in rural Ghana in terms of gendered demand and consumption of water, and sanitation. The research was based on literature, a field questionnaire survey, Focus Group Discussions and Key Informant Interviews.

Pressures and Drivers for Water Demand and Consumption

Population increase is one of the main drivers for increased demand for water and sanitation services. The global population, projected to be 8.6 billion by 2030 and increase to 9.8 billion in 2050, had reached 7.6 billion people as of June 2017 (UN DESA 2017). Africa and Asia are experiencing rapid urbanization and it is one of the main challenges for providing adequate services in urban areas (Awumbila 2017). In Ghana, Awumbila et al. (2014) note that there is an interlinkage between migration, urbanization and poverty. The lack of proper infrastructure in some poorer neighborhoods is partly attributed to the rural-urban migration by the poor (Awumbila et al. 2014).

Urbanization has further compounded the population pressures, especially for urban areas such as Accra. Migration from rural areas and from the West Africa region has seen the population of Accra increasing. According to the Ghana Statistical Services (GSS), 50.9% of Ghana's population now resides in urban areas. Most people in the colonial and postcolonial period perceived urban areas as offering greater economic opportunities and better infrastructure such as water and sanitation (GSS 2014). Ghana only uses about 1% of its freshwater resources, but pollution from illegal mining and agricultural activities is impacting its water resources (Yeleliere et al. 2018). Water scarcity could be attributed to economic or physical water scarcity (Molden 2007). While there is need to ensure water quality in Ghana, for now the main challenge is economic water scarcity, where financial resources are critical for providing adequate water and sanitation in Accra, and Ghana at large.

Gender in Water and Sanitation in COVID-19 Context: Why It Matters?

Global initiatives such as the Sustainable Development Goals (SDGs) — especially SDG 5 — addresses gender. The advent of COVID-19 has the potential of destroying some of the gender gains which had been made before the beginning of COVID-19. The focus of the study was the Ga South District, a rural district within the Greater Accra Metropolitan Area (GAMA). Water and sanitation are genuine developmental concerns for Ghana, further magnified with the advent of COVID-19 (Connell 2020; Corburn et al. 2020; Duti 2020; Morgan 2020; Rutayisire et al. 2020; Saba 2020; UN Women 2020).

Ghana has acceded to international gender conventions, such as the Convention on the Elimination of All Forms of Discrimination against Women (CEDAW). Since Independence there have been Constitutional policy pronouncements, legislation and strategies to address the gender imbalance.

While there are progressive laws and policies in place, translating these into the lived experiences of the women remains a major challenge. An understanding of gender, especially access and control, from literature helped to inform the questions that were being asked in our questionnaire, qualitative group discussions and other data collected. The data collected was disaggregated according to sex, so the gender analysis could be conducted; as Doss notes, collecting sex disaggregated data is the first step towards collecting gender data (Doss 2013). When questions such as 'why' are asked, we begin to appreciate the importance of gender analysis as it underscores the reasons behind the unequal power dynamics between men and women.

Study Area

The study was conducted in Ga South District which is part of the Greater Accra Metropolitan Area. It built on the Dutch Embassy funded urban study which helped develop the research instruments. These research instruments were further refined to accommodate the rural context and also added questions pertaining to domestic violence.

The rationale for the selection of Ga South District was in-formed by it being a rural area in order to observe the impacts of COVID-19 within the rural context. The study was conducted in two adjacent communities, namely Obom and Obokwashie as shown in Figure 1.

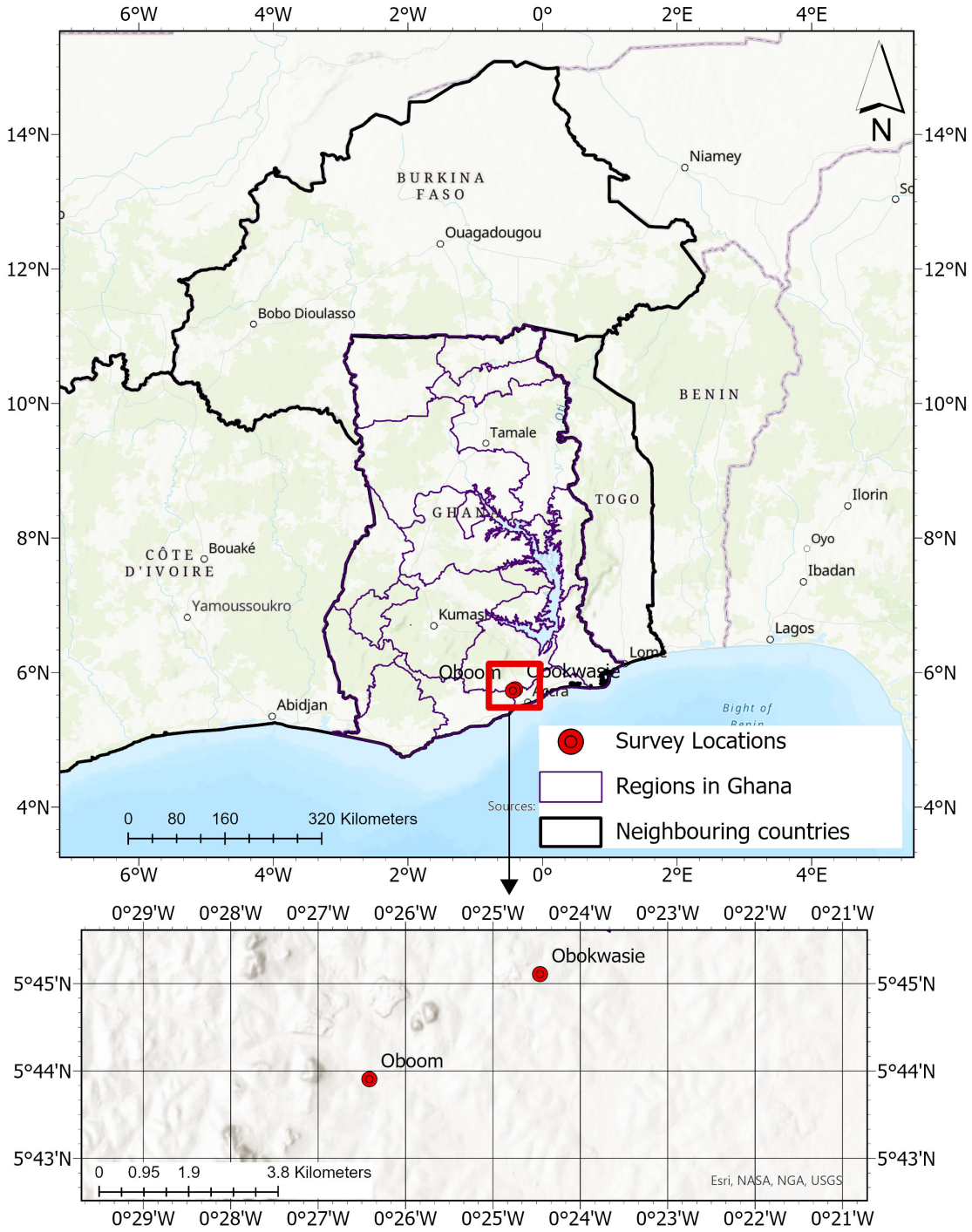

Figure 1. Study location within Ghana.

Source: Map drawn by Komlavi Akpoti, IWMI, Ghana.

Research Methodology

The research methodology entailed the use of a mixed methods approach (Castro et al. 2010; Creswell et al. 2003; Galasiński and Kozłowska 2010; Morse et al. 2006; Plano Clark et al. 2008; Tashakkori and Teddlie 2010). Data collection was carried out in 2021, during the COVID-19 pandemic. First, a questionnaire survey was conducted among the 146 households. The questionnaire enumeration team comprised of four men and women each. The questionnaire was based on modules focussing on basic household information, household assets, knowledge of COVID-19, water and sanitation, handwashing, sources of income, food security and wellbeing.[1] Most modules captured gender dimensions of the responses and collecting the pre-COVID-19 and COVID-19 era responses to better understand how the pandemic has differentially impacted the study community. One respondent (either male or female) was interviewed per household.

Second, 16 Focus Group Discussions were conducted with women, men, youths and mixed groups (refer to Table 1). These were led by a woman facilitator, who was supported by a man. The objective of the discussions was to ensure that the study validates the findings coming from the household questionnaire survey and also capture the differential interests among women, men and youths which were then moderated in the mixed group discussions to further validate the findings. Mixed groups were facilitated to discuss issues raised by the different groups and validation and cross learning. In line with COVID-19 protocols, the maximum number of participants was six. For the mixed groups, these comprised of two adult women, two adult men and two youths.

Third, 6 Key Informant Interviews were also conducted with district and other institutional researchers with knowledge of the study areas and water and sanitation issues. The key informants also included chiefs and district officials.

Table 1. Summary of qualitative data collection approaches.

Community	FGDs	Life histories	Key informant interview
Obom	8	6	3
Obokwashie	8	6	3
Total	16	12	6

Fourth, in order to capture the lived experiences within the study area, 12 Life Histories were conducted. Life History respondents included women and men from different social strata and age groups as well as people living with disabilities. Life histories were meant to complement the Key Informant Interviews, which tend to focus on the institutional perspectives as opposed to the lived experiences of those bereft of senior positions in a community (Leahy 2021; Lokot 2021; Osella and Osella 2000; Werner 2017).

Literature review was conducted on COVID-19 journal and programme and project reports and websites. This was an important source of information and general trends. Webinars were also important for accessing up-to-date information on the rapidly unfolding pandemic.

Ethics

Prior to beginning the field data collection, ethics forms were filled in for all the project components. The ethics forms also considered that the data collection was being conducted during the outbreak of COVID-19. Therefore, measures were put in place to ensure that both field enumerators and the household, as well as focus group respondents, followed the COVID-19 protocols recommended by the Government of Ghana and the World Health Organization. The ethics application was made to the IWMI Internal Review Board (IRB) who reviewed the submission. The IRB recommendations were diligently followed in the conduct of the study. All field enumerators and Focus Group Facilitators had to pass the UNICEF online course on Ethics.[2]

Limitations of the Study

The study did not include counterfactuals. The research team felt the insights from the questionnaire survey within the COVID-19 data collection restrictions to be important and relevant findings. The study also made use of insights from the Focus Group Discussions, which might not be statistically significant, but are significant for social science studies and need to be reflected in the report findings. For the medical waste management, the findings are based on Key Informant Interviews, and we believe that they reflect the issues affecting medical waste during the COVID-19 era. The study could not conduct many Key Informant Interviews due to most institutions being partially closed.

[1] See Annex 1 for the questionnaire survey instrument that was used.
[2] UNICEF: https://agora.unicef.org/course/info.php?id=2173

Research Findings

The following sections provide highlights from the research studies according to the different thematic topics.

Gender Composition of Respondents

The rural household survey interviewed 146 respondents comprising of 85 (58.2%) women and 61 (41.8%) men as shown in Table 2.

About 3 out of every 10 respondents (29.8%) were aged 26–35 years, followed by about one in every four respondents (25.9%) who were aged 18–25 years. The least proportion of respondents (7.8%) came from those who were aged above 60 years. The proportion of respondents from female-headed households were relatively higher than those from male-headed households headed by men among respondents aged 26–35 years, 18–25 years, and above 60 years: 32.2%, 27.1% and 11.9%, compared to 28.8%, 25.3%, and 6.2% respectively. For the 36–45 age group, the proportion of respondents from female-headed households comprised about 12%, with respondents from male-headed households comprising nearly double the figure (about 22%) as shown in Figure 2.

Table 2. Gender composition of the household questionnaire respondents.

Gender of target respondent	Number	Percentage
Male	61	41.8
Female	85	58.2
Total	146	100

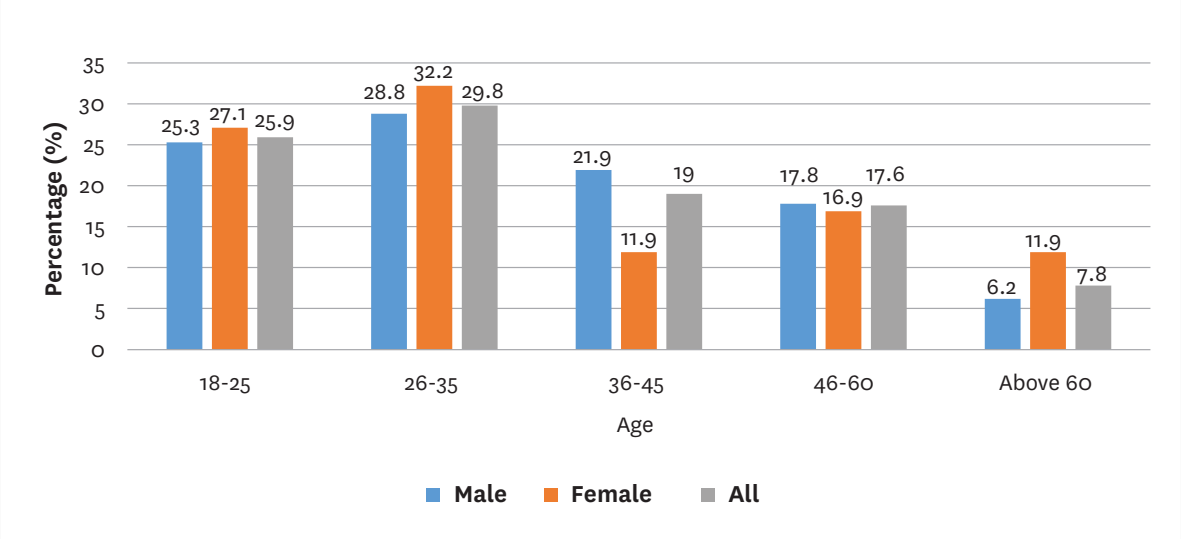

Figure 2. Distribution of respondents by age and sex of household head.

Household Size Distribution by Gender

A greater proportion of households had about 4 to 5 members (44.4%) followed by those with about 2 to 3 members (31.2%). Both male- and female-headed households which were single-person households constituted about 8% of the sample. On the other hand, a higher proportion of the male-headed households (17.8%) had 6 to 9 members compared to female-headed households (11.9%) and 16.1% for the overall. This was different for urban areas where single-male respondents were 30% compared to 11% for women as shown in Figure 3. The study area is closer to Accra, hence a number of youths were likely to be migrating, mainly to Accra's Dubai[3] area. A better understanding of household composition has implications on water requirements and the burden for water collection.

About 44% of all households had a family size comprising 4 to 5 family members.

[3] This is an area near the Kwame Nkrumah Interchange where most informal traders would migrate to. The name Dubai was first used by former President Mahama, when he inaugurated the interchange and declared that he had brought Dubai to Accra.

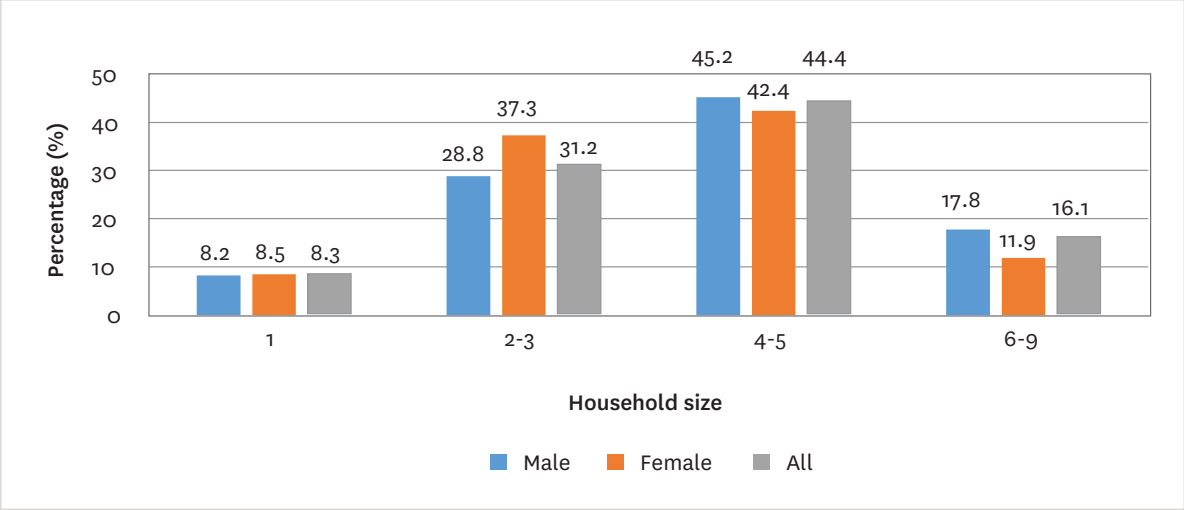

Figure 3. Household size distribution by gender of household head.

Respondents' Marital Status

The monogamous married respondents were about 58% of the household questionnaire respondents. Polygamously married respondents comprised just above 1%, as shown in Figure 4. The proportion of the those who had never married was about 22% — about 34% for respondents in female-headed households and 17% for male-headed households. Widowed respondents made up 7% of the respondents with widows (women) comprising about 24% and widowers (men) below 1%. About 6% were living in informal consensual unions, and the divorced comprised about 3.4%. It is significant to note the nature of the marital status as it could determine access to resources and assets and how a household could respond to pandemics such as COVID-19 is key in this study.

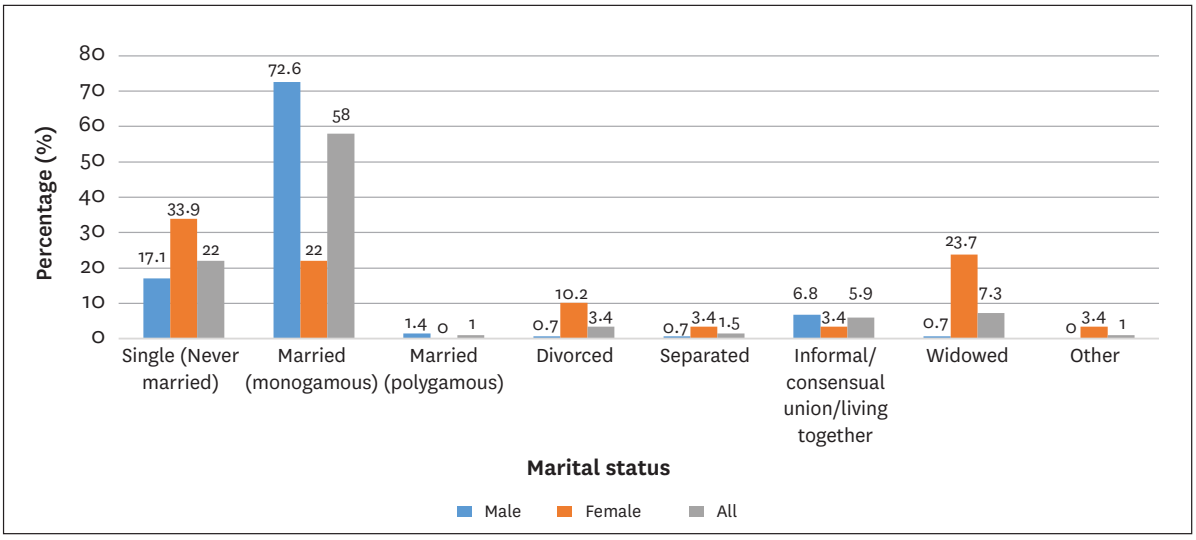

Figure 4. Marital status of respondents by gender of household head.

Religious Affiliation of Respondents

The study area mainly comprised of Christians who constituted over 92%, with Muslims being about 5.4% as shown in Figure 5. Religion may influence norms and practices important for the gendered relationships.

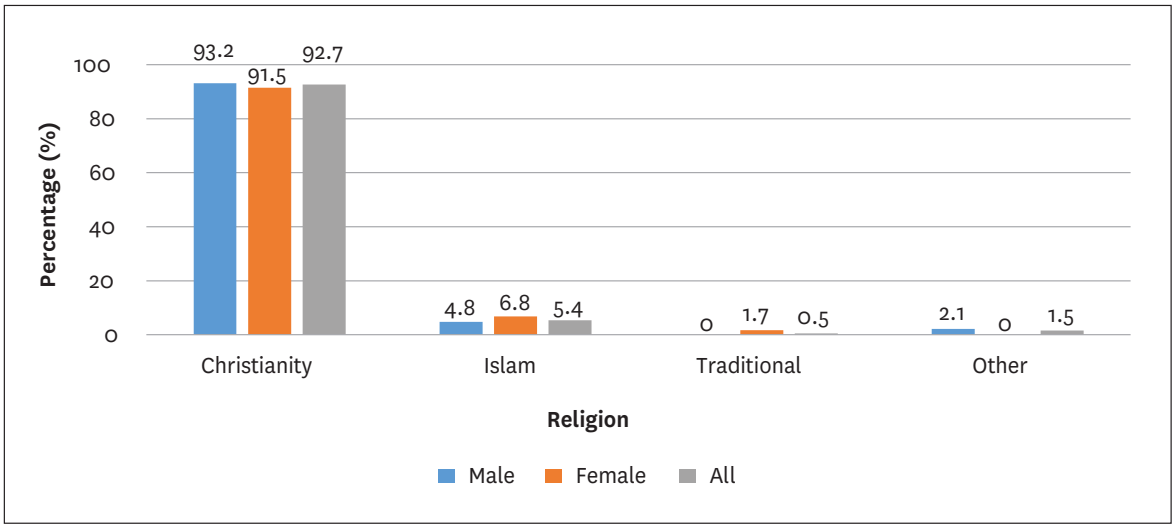

Figure 5. Main religion practiced in the household.

Educational Level of Respondents

Education is a key attribute, basis gender as well as access to water and sanitation. More respondents from female-headed households, about 35.3%, had no formal education compared to about 13% of the respondents in male-headed households (see Table 3).

The study also accounted for the level of education that respondents had attained. Over half (52.6%) from female-headed households had completed Junior Secondary School compared to a little over 40% of the respondents from male-headed households. The average for primary school level education was about 18.2%, with respondents from female-headed households making up about 10.5% and those from male-headed households comprising about 20.5% as shown in Figure 6.

Table 3. Gender composition of the household questionnaire respondents.

Formal education?	Male		Female		All	
	N	%	N	%	N	%
No	8	13	30	35.3	38	26
Yes	53	87	55	64.7	108	74
Total	61	100	85	100	146	100

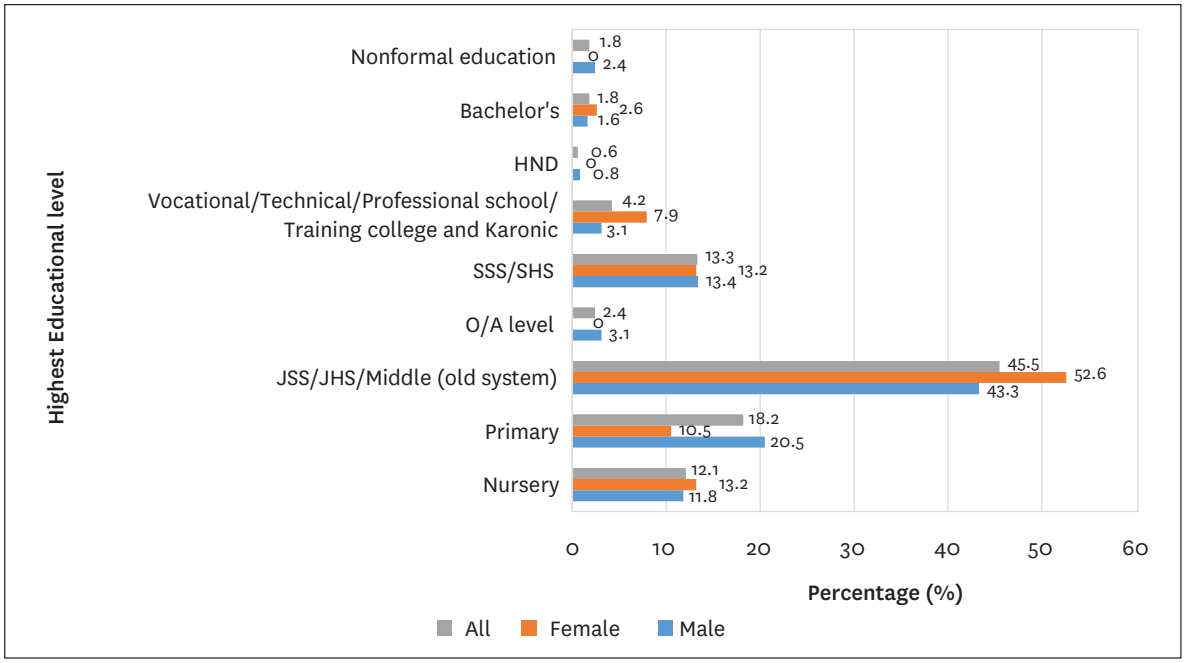

Figure 6. The highest level of education attained by sex of the head of the household.

Notes: HND - Higher National Diploma; SSS - Senior Secondary School; SHS - Senior High School; O/A level - Ordinary/Advanced level; JSS - Junior Secondary School; JHS - Junior High School.

Length of Stay in Study Area

The surveyed households had a wide range of length of stay. Most respondents had stayed for over 5 years in the study areas, with respondents from female-headed households having a slightly higher representation in the 1 to 5 years category at about 31% as compared to 28% for those in male-headed households as shown in Figure 7.

Key Informant Interviews with respondents such as the Chief indicated that there are also long-term residents; about 18% of the respondents have lived in the area for over 30 years, and were nearly evenly distributed between male- and female-headed households. The fact that this is a well-established resident population entails the need for further studies to try and better understand why the levels of access to water, and in particular sanitation, was low.

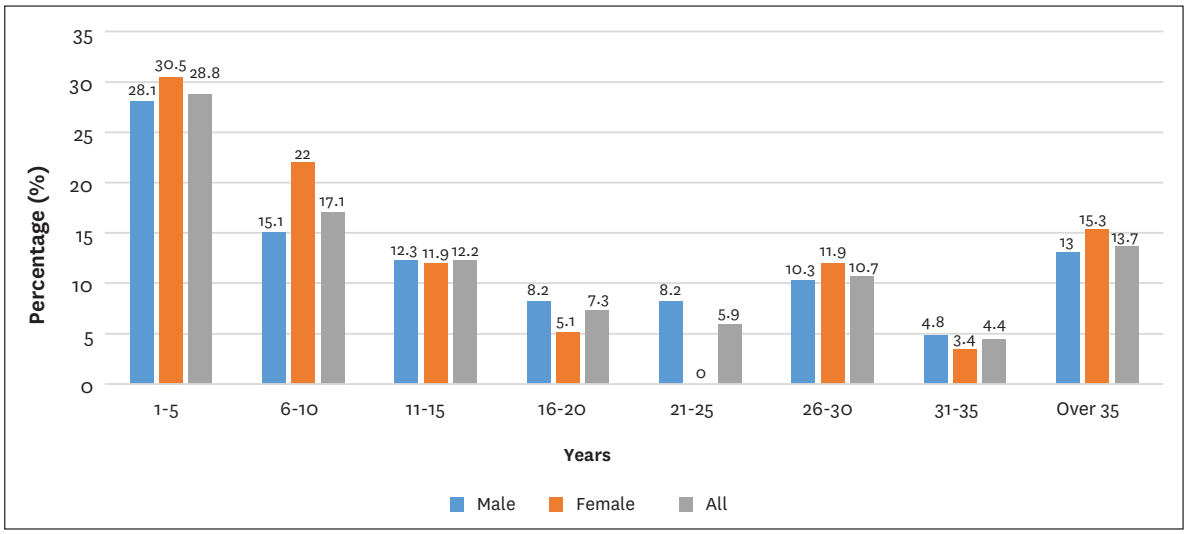

Figure 7. The number of years the household has stayed in the community.

Knowledge of COVID-19

There was a high level of awareness of COVID-19 symptoms among the respondents, especially with identifying coughing at 82% as the main symptom for both women and men as shown in Figure 8. The other symptoms identified by respondents included high body temperature (55.1%) and sneezing (41.0%). About 11% of respondents from male-headed households and 6.8% of the respondents from female-headed households indicated no knowledge of COVID-19 symptoms. This was more than three times greater than the number from the urban areas. The responses cited below from a woman and man who took part in the Focus Group Discussions highlight their awareness:

"...as for the disease, we have heard a whole lot about it, and we are told to always put on the nose mask. For me, whenever I am going to Accra is when I put on the mask. We also hear that it is killing a lot of people..." (Respondent 1, Female, Twi FGD, Women, Onibie).

"... COVID-19 is a disease that has come to this whole world that is transmitted from one person to another. It is airborne so once you get closer to an infected person you get it too. Dirt can also make you contract the disease..." (Respondent 2, Male, OBOM, Youth, FGD 1).

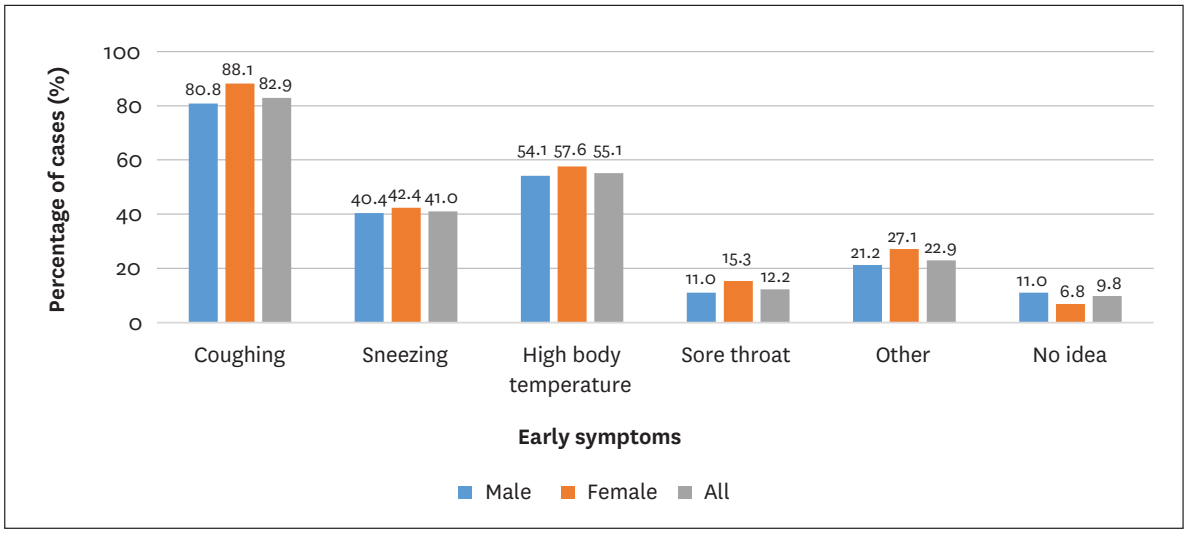

Figure 8. Knowledge of early COVID-19 symptoms.

While the knowledge of COVID-19 was high among the respondents, there was also the perception that it was more so affecting urban areas (such as Accra). The women respondent cited above says: "...for me, whenever I am going to Accra is when I put on the mask." The responses on the perception towards nose mask wearing were similar for both women and men. This further aligns with global research findings (Howard 2021).

One respondent explained that they put on a mask when they go out and not at home because there is no COVID-19 in their households.

The youths were noted to have better access to information on COVID-19. However, discussions with the Youth Focus Group Discussions it was pointed out that that knowledge is further disaggregated, with boys having greater information access than girls.

"... we boys usually do a lot of outing than the grownups and we are the ones that usually use android phones so all the time we see updates..." (Respondent 3, Male, Obom, Youth FGD, 1).

"...okay, the boys are into 'Okada;' business (motor-riding business) so it's understandable more boys can afford smart phones. As for we, the ladies, if we don't work, we cannot afford smart phones..." (Respondent 4, Female, Obokwashie, Youth).

Nuanced and differential access to information was reported to be a factor of the gender roles in domestic and reproductive labor. The quotations from women and youth Focus Group Discussions highlight such information asymmetry.

"... from my point of view, some men wake up and leave the house to go to town leaving the women at home working. So, when information comes since he is outside, he would hear it first and later inform you when he gets home." (Respondent 5, Female, Obom, FGD, Women 2).

"...like they said men usually chat among themselves, but women hardly do that. We women are always busy at home working so I would not have the time to call a friend to chat with..." (Respondent 6, Female, Obom, Youth, FGD 1).

Few people (3.4%) knew someone who had contracted COVID-19. Of this, those from male-headed households were 2.1%, with respondents from female-headed households comprising 6.8% as shown in Figure 9.

Notably, there was stigma against those who had contracted COVID-19. About two-thirds of the respondents from male-headed households indicated that they would stay away from a person who had recovered from COVID-19 as compared to about half of those from female-headed households. The proportion of respondents from female-headed households who would stay away from people who have recovered from the disease was 10 percentage points lower than that of those from male-headed households. Nevertheless, the majority of the respondents stigmatize persons infected with COVID-19. This could also contribute to most patients not informing their neighbors once they know they have contracted COVID-19.

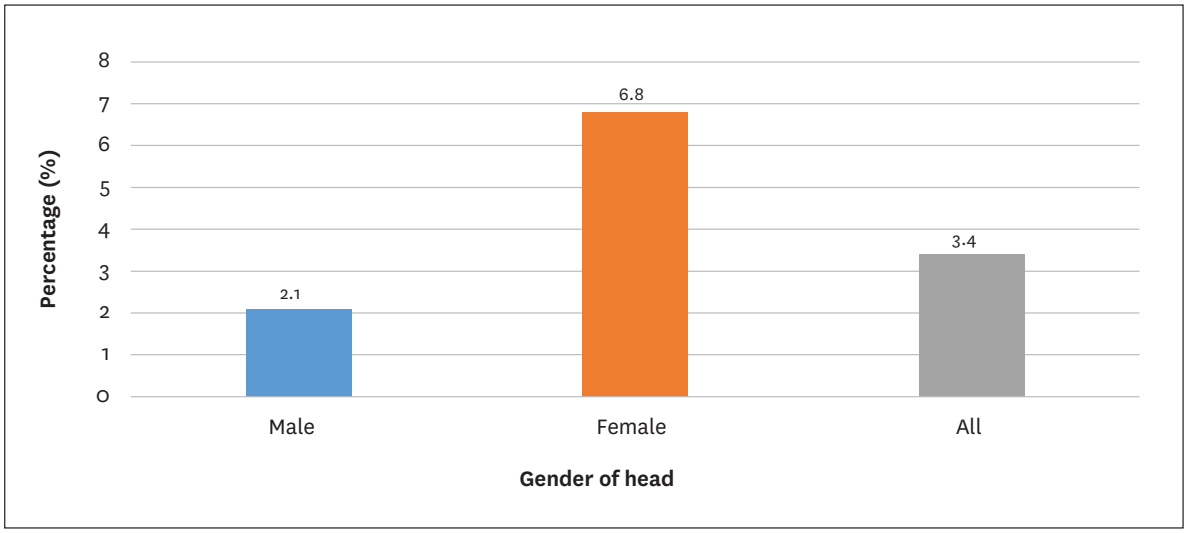

Figure 9. Proportion of respondents who know people who had contracted COVID-19.

Domestic Violence

The study sought to understand the impact of COVID-19 on domestic violence. Table 4 lists the results from the questionnaire survey. About 13% of the respondents felt that COVID-19 was contributing to domestic violence.

The questionnaire survey offered potential reasons for the increased domestic violence. Men identified family altercations as a result of financial hardship and verbal abuse between husband and wife as the main forms of domestic abuse. Women, on the other hand, identified general emotional and physical abuse, at 50% and financial altercations due to financial hardship at about 33% as the main two highest forms of domestic violence. Table 5 shows some more forms of domestic violence identified by respondents.

Table 4. Noticed effects of COVID-19 on domestic violence.

Response	Male	Female	All
Yes	13	11.9	12.7
No	87	88.1	87.3
Total	100	100	100

Table 5. Types of domestic violence experienced.

No.	Response	Male	Female	All
1.	Family altercations due to financial hardship	40	33.3	38.1
2.	General emotional and physical abuse	6.7	50	19
3.	Men become violent/abuse women and children due to financial stress	6.7	16.7	9.5
4.	Verbal abuse on wife or husband	40	0	28.6
5.	Fear/psychological trauma of being abused	6.7	0	4.8
6.	Total	100	100	100

Gendered COVID-19 Impacts

This section illustrates a few highlights of the gendered impacts of COVID-19.

Impact on women and men

The adverse effects of the COVID-19 pandemic on women manifested through the loss of income (35.1%), decline in business / trading activities (32.8%), restrictions in movement / general human activities (14.9%) and loss of jobs (14.2%), whereas job losses (37.3%), loss of income (31%) and decline in business activities (15.9%) were the main impacts of the COVID-19 pandemic on men (see Figures 10 and 11). Loss of income (39.6%) among women in male-headed households coupled with decline in business activities (31.3%) were the main effects of COVID-19 on women. Decline in business activities (36.8%), loss of income (23.7%) and loss of jobs (21.1%) were cited as the main effects of COVID-19 on women among female-headed households (see Figure 10).

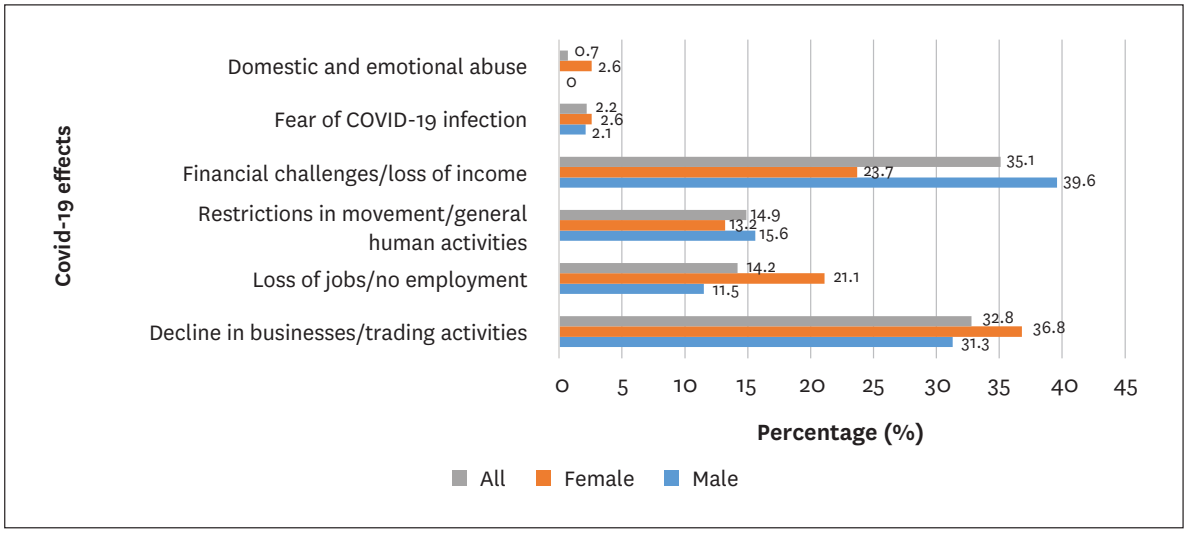

Figure 10. Impact of COVID-19 on women.

The main adverse effects of the COVID-19 pandemic on men included loss of job (37.3%), loss of income (31%), and decline in business activities (15.9%). Men in male-headed households were the most affected as 38.5% and 35.2% cited loss of employment and loss of income from the COVID-19 pandemic. Of the men in female-headed households, 34.3% lost their jobs and 20% recorded loss of income (see Figure 11).

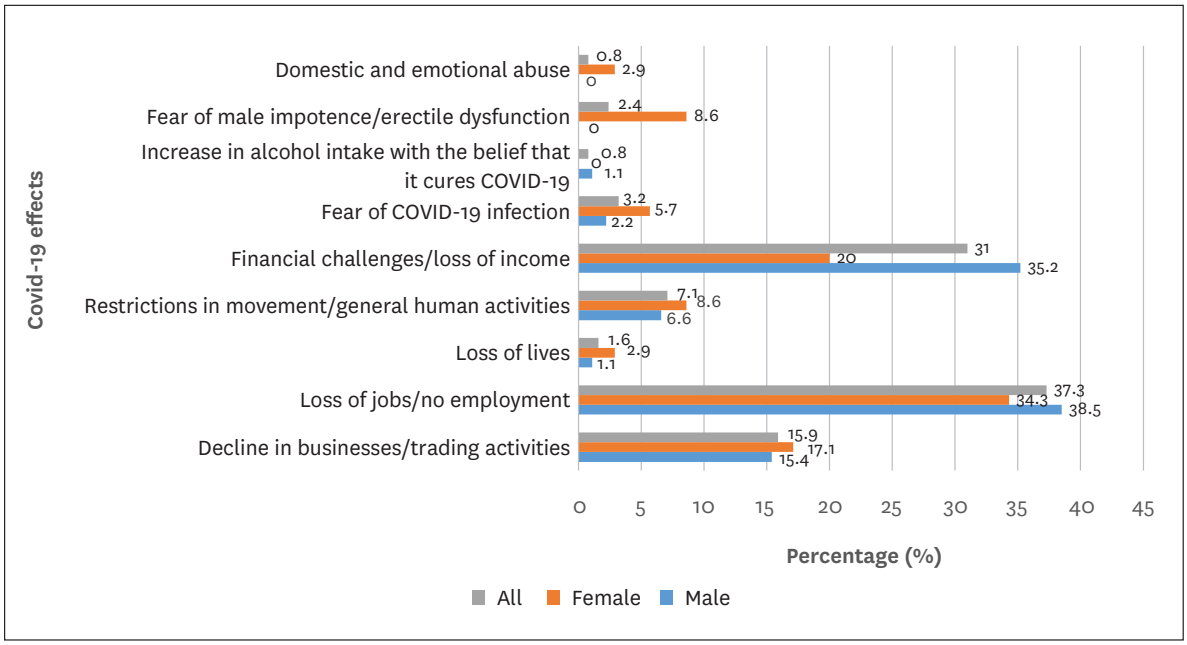

Figure 11. Impact of COVID-19 on men.

Teenage pregnancies

School-going children were affected by school closure. Significantly, about 10% of the girls were further disrupted due to teenage pregnancies. It was interesting to note that teenage pregnancies were more pronounced in female-headed households at about 21% compared to male-headed households where the rate was 5%. This further reinforces the importance of using a gender lens when providing solutions to the gendered and intersectional impact of COVID-19.

COVID-19 and Impact on Study Area

It was very clear from both the quantitative and qualitative research findings that COVID-19 had negative consequences in the communities. The respondents reported that COVID-19 drastically reduced employment opportunities but also noted that it had brought a few opportunities according to about 16% of the male respondents and 10% of the female respondents. A few people noted that they have started producing and selling face masks and other protective equipment (Figure 12).

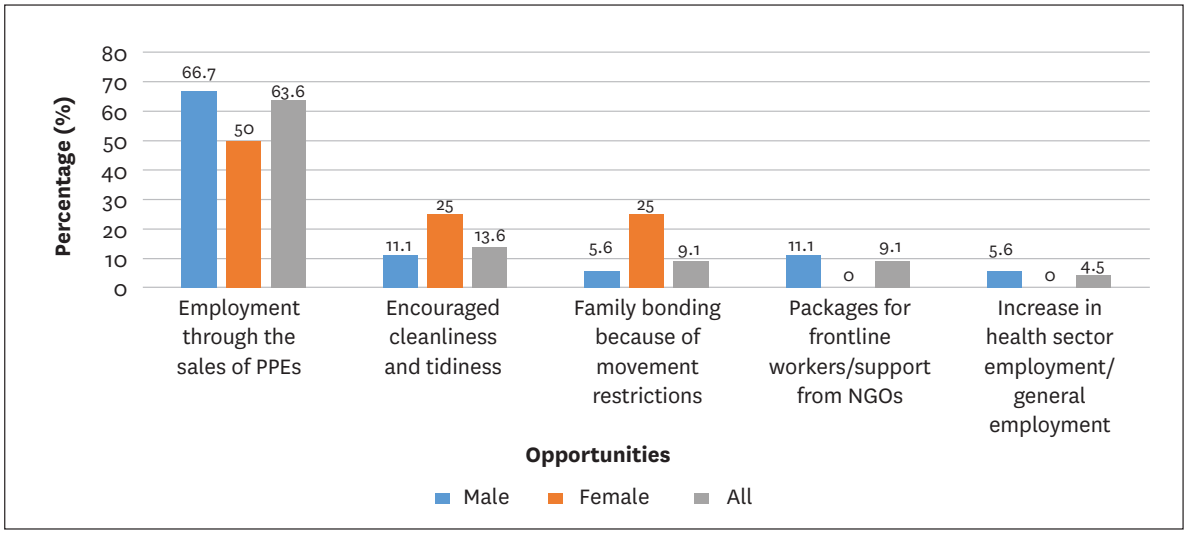

Figure 12. Limited opportunities from COVID-19 by gender of the household head.

*Notes:*PPE - Personal protective equipment; NGO - Nongovernmental organization.

Measures Taken for Protection Against COVID-19

The respondents articulated the main measures to be taken to protect themselves from the spread of COVID-19. The response measures included the use of nose mask when going out (85.9%), frequent washing of hands (76.1%), use of alcohol-based hand sanitizers in the absence of handwashing (68.8%) and practicing social distancing (46.8%) among others. A few of the respondents (2%) noted a lack of knowledge on preventative measures against COVID-19 (see Figure 13).

One of the possible reasons for the high level of knowledge was due to the unprecedented nature of COVID-19, which affected all communities. The Government of Ghana, the World Health Organization, UNICEF, the European Union and other development partners embarked on campaigns over the radio, televisions, community meetings, mobile loudspeaker announcements and billboards, which makes it difficult to understand the cases where respondents indicated that they had no knowledge. Significant resources were availed for publicity campaigns and warnings pertaining to COVID-19.

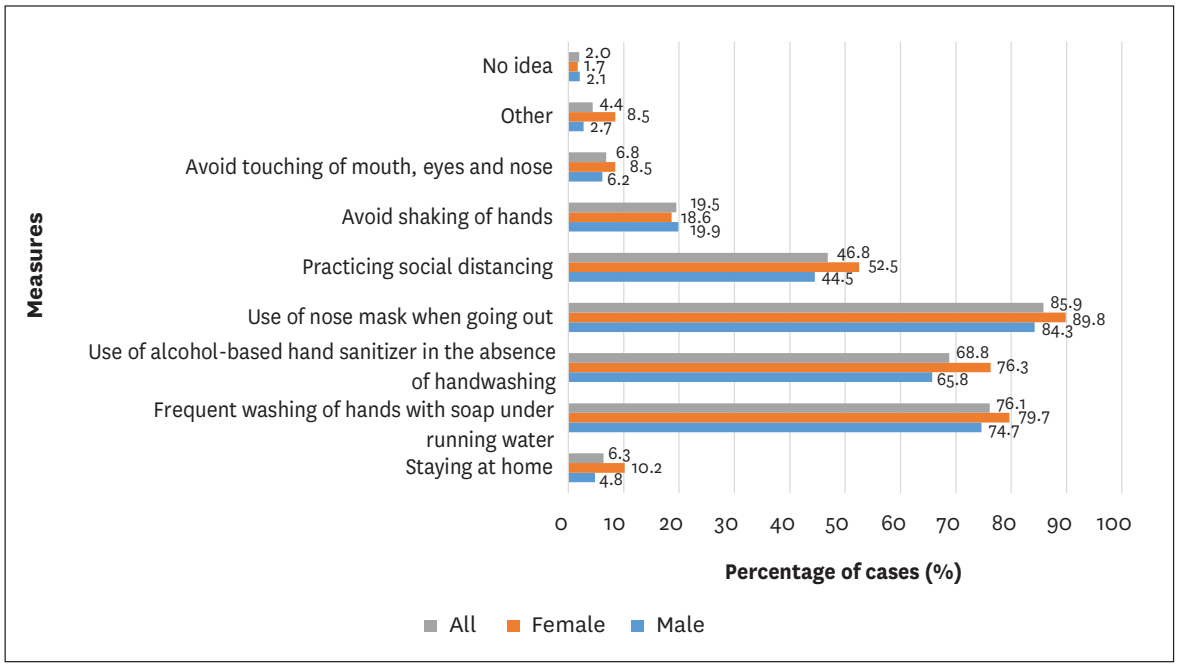

Figure 13. Measures to stay safe from COVID-19.

Geography of the COVID-19 Victims

Figure 14 shows the geography of persons infected with COVID-19 that the respondents knew about. Among the 3.4% who knew someone who has contracted COVID-19, about 14.3% of them said they were located in the same community, 28.3% identified them in a neighboring community within the same district, while 42% noted they were located elsewhere in Ghana and 14.3% observed that they were located in a different district but same region. All those who knew people in their communities of residence who had contracted the disease or in a different district but same region were respondents in female-headed households. Two-thirds of the respondents in male-headed households indicated they knew of COVID-19 cases in other parts of Ghana but not within Greater Accra. This is an interesting finding as it was also an argument used for not observing the lockdown when it was imposed on Accra and Kumasi. Most of the low-income households who wanted to engage in the informal sector were calling for the lifting of the lockdown as they knew no one in their communities that had been affected.

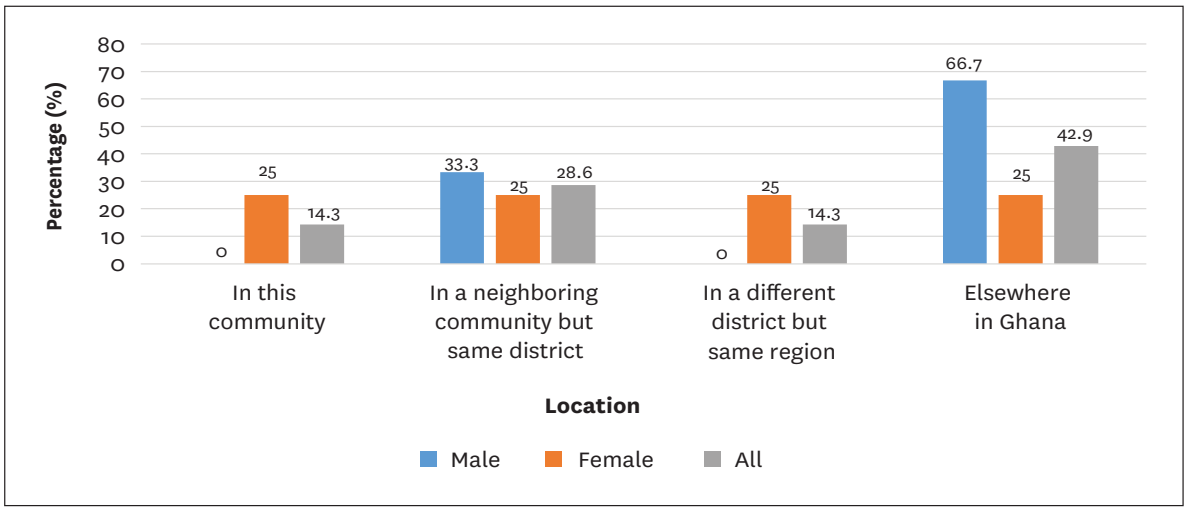

Figure 14. Location of COVID-19 patients by sex of the head of household respondents.

Domestic Water Access for Surveyed Households

The surveyed respondents were collectively mainly accessing water through boreholes or tube wells (31.2%), with 23.7% of female-headed households recording this water source against 34.2% for male-headed households. The public standpipe was the second most used source of water at about 21%. As opposed to urban settings, rural areas do not have water connections to the house or the compound.

It is important to note that the Government of Ghana's Free Water Initiative largely catered to urban areas where the Ghana Water Company provides piped water which were complemented with water tankers during the initiative. Rural areas never benefited from the same as they continued to pay for water which is based on the size of container used to collect water. This water fee is meant to ensure that there is a fund for maintenance and to pay the person responsible for collecting the water levy and guaranteeing that the water point is clean. Some boreholes open at certain times and will be locked during non-operational hours. A number of respondents confirmed that the free water initiative had not been extended to the rural areas:

"There is no free water in the community, when COVID-19 came that they were supplying free water it didn't reach here, we all bought water before and after COVID-19…" (Respondent 7, Female, Obom, FGD, Women 1).

"Since the start of the COVID-19, and they said they were given water, we never had some of the water. Moderator: Very good. They said they were sharing food, we did not get anything and at last, the food that came that we did not even know where it came from, were in takeaways and they even made politics out the food that was brought to this Obom community…" (Respondent 8, Male, 2nd Mixed Group, Obom).

Access to Drinking Water

About 42% of the questionnaire survey respondents bought plastic water sachets for drinking, followed by those who fetched their drinking water from a borehole or a tube well (31.2%) and public tap / standpipe (21%) as shown in Figure 15. A higher proportion of female-headed respondents (47.5%) used sachet water as their main source of drinking water compared to 39% of the male-headed households. In spite of the plastic sachets being more affordable than bottled water, it still negatively affects the access of low-income earners to safe drinking water. This was not anticipated, especially in the context of rural areas, where financial resources tend to be limited compared to urban areas. Studies conducted on sachet drinking water samples demonstrate that even this packaged water is less regulated, resulting in a wide variation of the sachet water quality (Wright et al. 2004). Some of the sachet water companies use tap water with minimum further purification (Kangmennaang et al. 2020; Machdar et al. 2013; Wright et al. 2004).

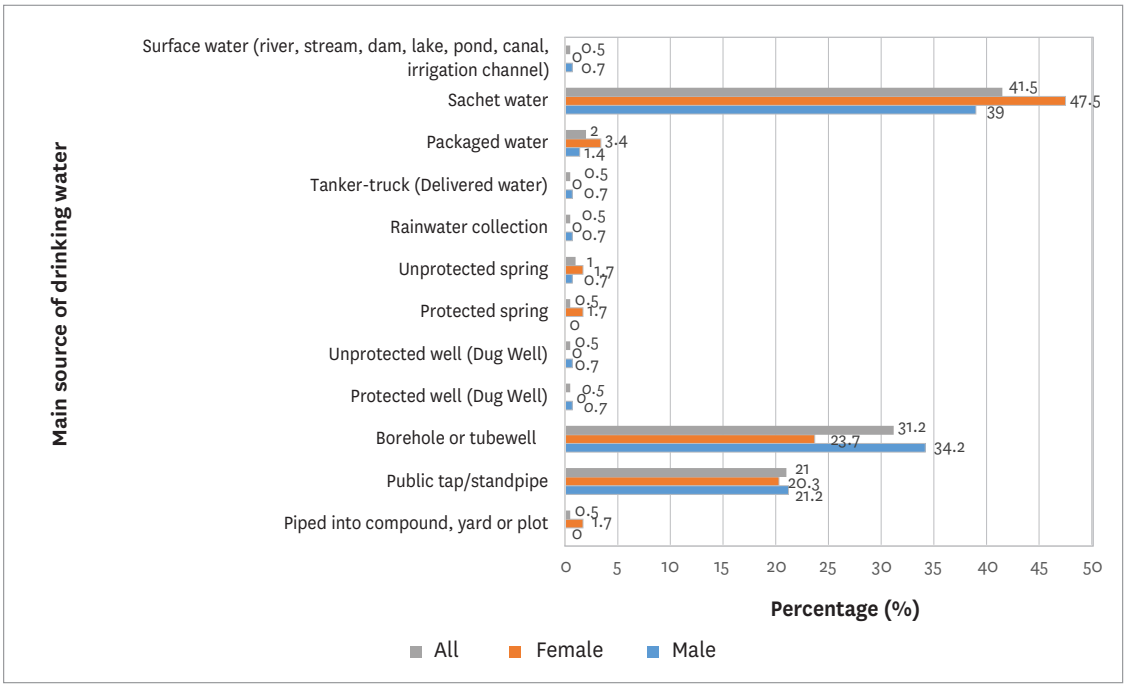

Figure 15. The main source of drinking water disaggregated by sex of the household head.

The sources of drinking water did not change as a result of COVID-19.

Source of Water for Handwashing during COVID-19

For the residents, water for handwashing in the pre-COVID-19 period was mainly obtained from elsewhere (94.6%), other than in their own dwelling (3.9%) or in their own yard or plot (1.5%) as shown in Figure 16.

Figure 17 illustrates the main sources of water for handwashing during COVID-19. It was observed that both female- and male-headed households largely depended on borehole water (55.9% and 58.9% respectively) and public standpipe (32.2% and 34.9% respectively) for handwashing during the pandemic. The remaining sources each contributed smaller proportions of water requirements for handwashing.

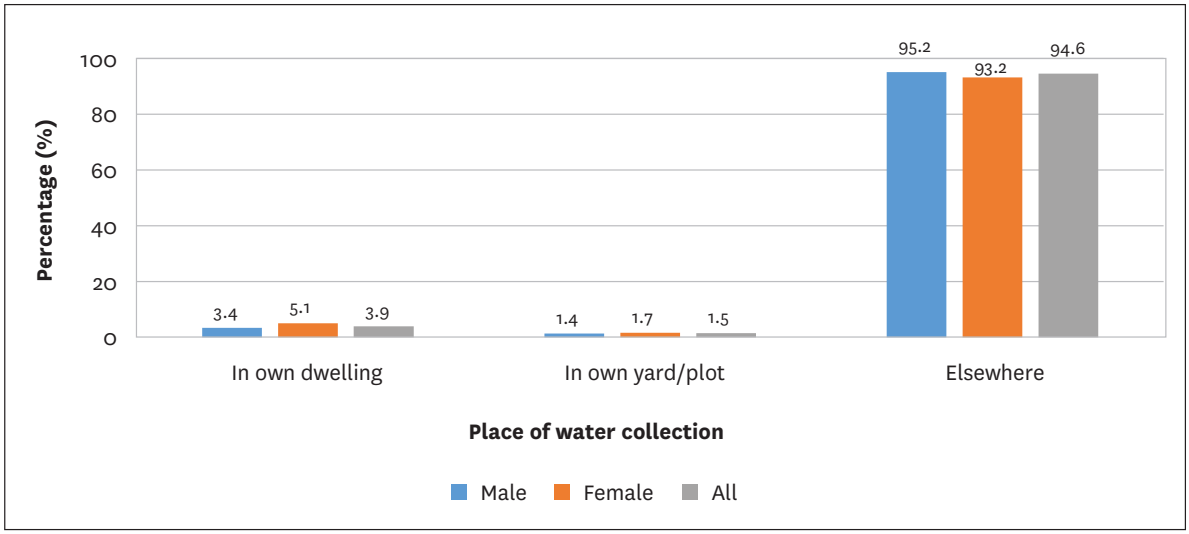

Figure 16. Place where handwashing water was collected from before COVID-19.

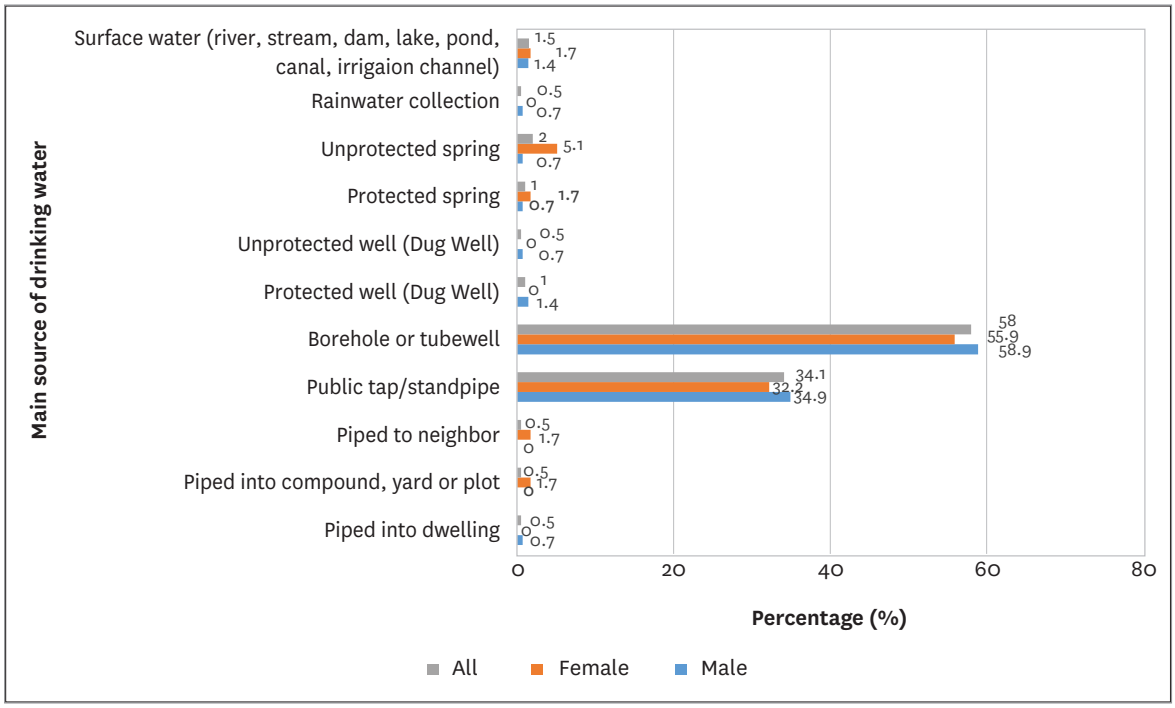

Figure 17. Main source of handwashing water after COVID-19 by sex of the household head.

Who Collects Water?

The aggregated results show that mostly women and girls tend to collect water for household use (Figure 18). Further disaggregation of the results based on the gender of the household heads highlight an interesting finding. From male-headed households, a higher proportion of women collected water for the household than girls while female-headed households reported a higher proportion of girls collecting water for household use than women; 53%, 33.3%, 51.7% and 44.8%, respectively.

These findings reflect that water collection in the rural context is still gendered with the responsibility for water collection largely shouldered by women and girls. It is important to also note that men said it was a taboo for men to carry water. The advent of COVID-19 entails the need to collect more water for increased handwashing, cleaning and other hygiene purposes.

Domestic water collection was largely characterized as the role of women, indicating that women had a greater burden as compared to urban settings, to go out and collect water. Focus Group Discussions further revealed the gendered nature of domestic water collection.

"... To answer you, in this community there are some tasks we consider the responsibility of the woman and others we feel is for men. And you know also that we use firewood a lot here; so, the boys go to the bush to collect firewood and then girls go for water collection. So, the woman's responsibility is to bring water and the boys' responsibility is to bring firewood..." (Respondent 9, Male, Obokwashie, FGD, Mixed 1).

"...what I can also add is that, is our fathers and brothers work hard to get food on the table so we cannot allow them fetch water after their hard work. The house duties are for the females whiles the males brings housekeeping money. So how you treat your brother depends on how you would treat your husband in future..." (Respondent 10, Female, Obokwashie, FGD, Female Youth 1).

"It is the same; most of the time it is the young girls that cooks at home so the same reason why we allow women to fetch water applies to the girls too. Again, you cannot go to the water source with an elderly man as a young man and fetch your water first before the man, it doesn't show respect. You have to even take his container and fetch the water for him before you have your turn." (Respondent 11, Male, Obom, FGD, Youth 1).

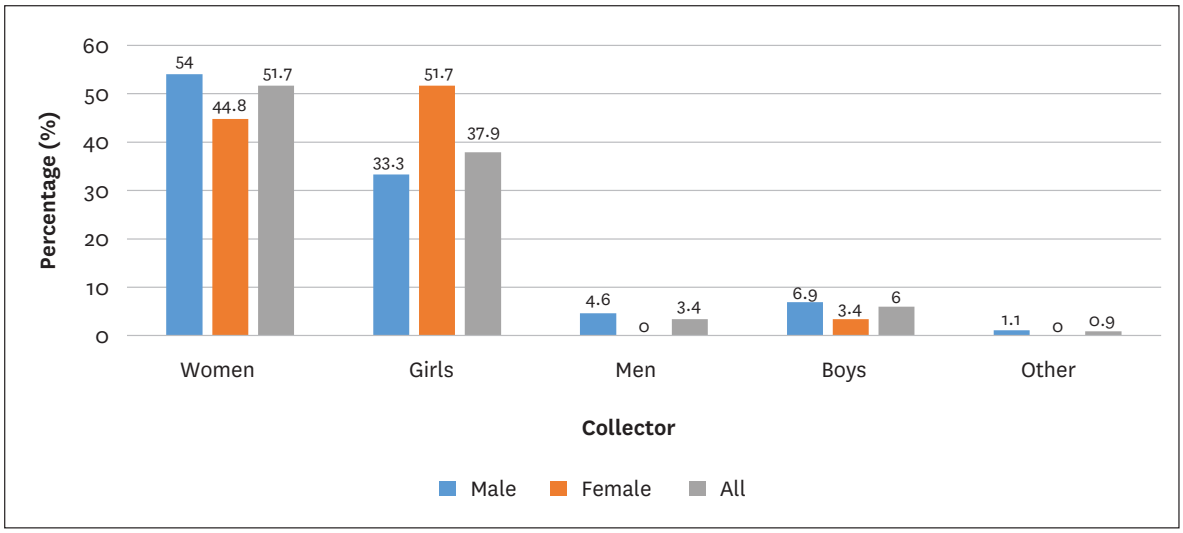

Figure 18. Person who collected water in the household before COVID-19 by household headship.

Duration of Water Collection

Over half of the households included in the survey obtained water from sources that took them at most 10 minutes to fetch and return home. Over a quarter of the households spent about 2–5 minutes to fetch water and return home, and another one-fourth reported spending about 6–10 minutes. Water collection times were 2–5 minutes for about 37% of the female-headed household compared to 25% for the male-headed households as shown in Figure 19. About 29% of female-headed households took 11–20 minutes to collect water, similar to about 27% for the male-headed households. About 17% of the female-headed households needed 21–65 minutes to collect water which compares with male-headed households (about 19%). It is important to note that only one additional borehole was provided after the advent of COVID-19. So, the actual water collection time for the community largely remained the same, before and during the COVID-19 period. What changed, however, was the frequency of collecting water as more water was used due to the need to practice increased handwashing and general cleanliness.

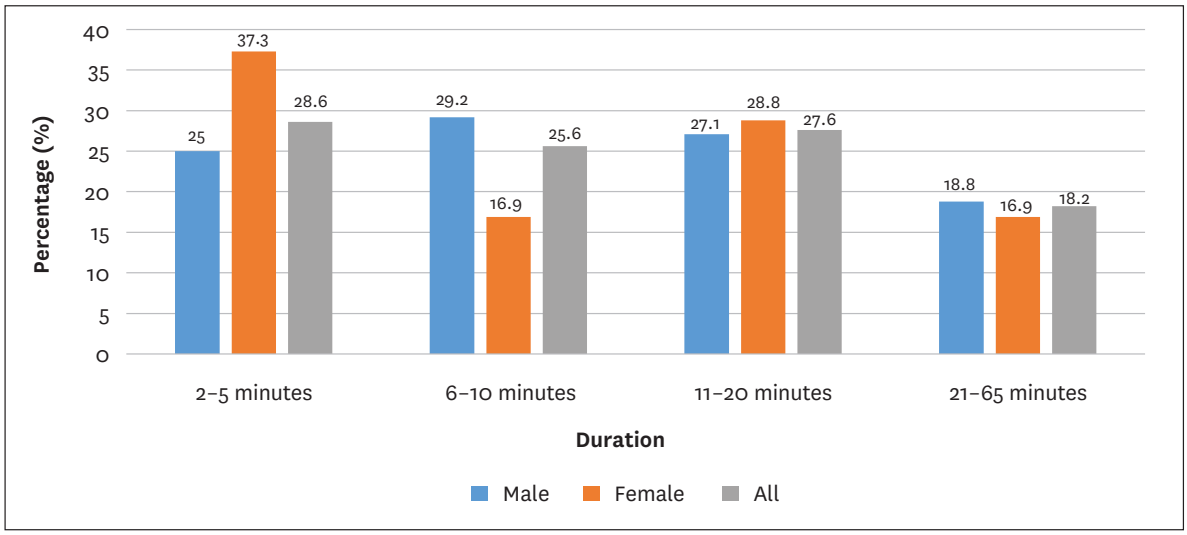

Figure 19. Duration of water collection during COVID-19.

Access to Sanitation

This section provides a brief overview of the findings on the sanitation facilities that household members had access to within the study communities.

Type of toilet facility used by household members

Access to sanitation was a major challenge in the study area. Generally, about 4 out of every 10 households did not have toilet facility in their households. About 42% of the male-headed households had no toilet facilities, higher than female-headed households (about 32%). They were using the bush or open areas. About 37% of the female-headed households were using pit latrine with slab compared to 32% of the male-headed households as in Figure 20.

Field observations showed that most households did not have such pit and slab toilets at their homestead. These were public toilets as well as schools and health facility toilets which the communities had taken over. The school had managed to build new toilets to avoid pupils using the same toilet facilities with the public. The hospital was also in the process of fundraising in order to provide toilets with patients-only access. Respondents noted the following:

"...yes, even when they built a toilet for the school then, the community members use it and don't keep it neat. Even three days ago it was announced that the community members also defecate in classrooms. They have announced it several times, but they still use the school toilet. I have toilet in my house. As a result, there a lot of polythene bags (take away) in the town. I also have toilet in my house, I don't use public toilet." (Respondent 12, Female, Obom, FGD, Women 2).

"...you see because of the smell you do that in the house but rather in the bush but now there are chemicals that they pour in those holes, so the smell is minimized but we don't have the money to build toilet facility..." (Respondent 13, Female, Obokwashie, FGD, Women 1).

The issue of access to sanitation did not change with COVID-19. In order to clean the public as well as the hospital and school toilets which had been 'taken over' by the community, a volunteer was collecting fees. An interview with toilet fee collector and cleaner revealed that there is no fixed fees to use the toilet. Fees for toilet use range from GHS 0.10 to GHS 0.50. The toilet fee collector, however, lamented that most people do not want to pay and end up going into the bush to defecate. Women during FGDs indicated that going to the bush was quite risk (especially at night); women and children had even resorted to using plastic bags which would be disposed of in the bush during daytime. Societal views on sanitation were also raised during FGDs and interviews, as it was noted that surprisingly, even households with very modern housing structures did not have toilet facilities. The taboos resonate with studies elsewhere within Ghana and even more broadly, within West Africa (Balasubramanya et al. 2021; WaterAid 2009).

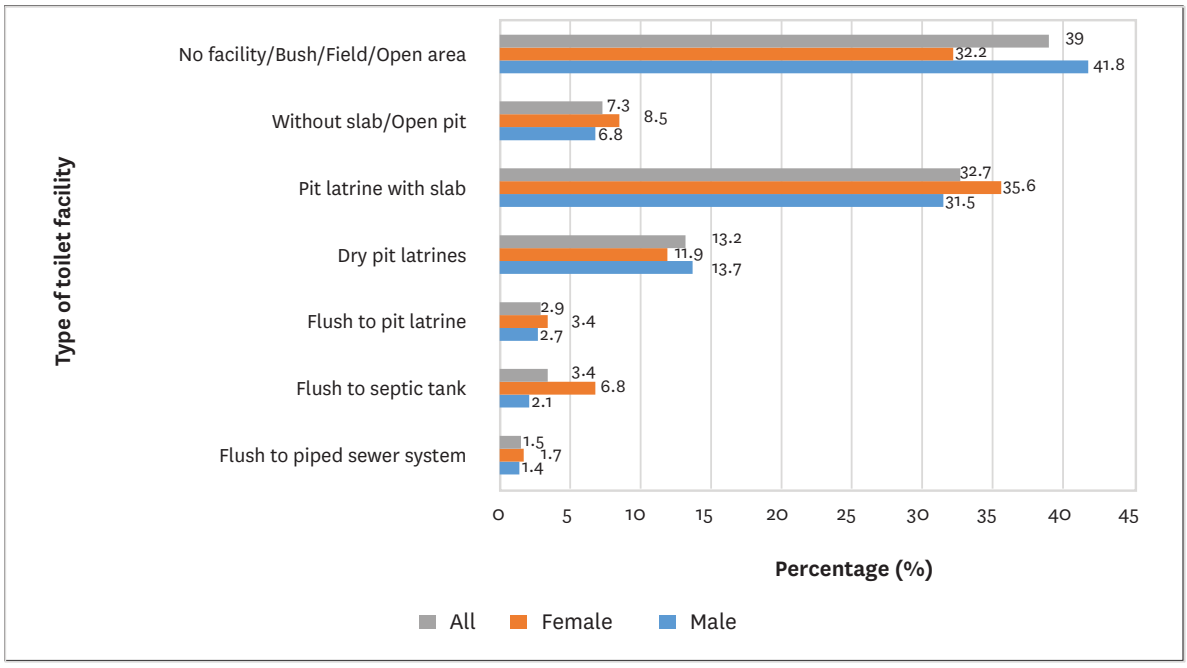

Figure 20. Availability of toilet facilities in the household.

COVID-19 and Food Security

In the past 12 months, COVID-19 has impacted food security. About 6 out of every 10 households skipped or reduced the quantity of meals served in the household. Less than 7% of the respondents skipped or reduced the size of meals almost always or all the time. For the households that skipped some of the meals some of the time, female-headed households were at about 46% with male-headed households at about 40% as shown in Figure 21.

The study went further to ask which household member would be affected by the reduced or skipped meal due to food shortages; the results are presented in Figure 22. Most household heads were the worst hit when the household had to reduce or skip meals. This was very prevalent among female-household heads as two-thirds of them had to forgo their meals or reduce the size, compared to 43.9% of the male-household heads.

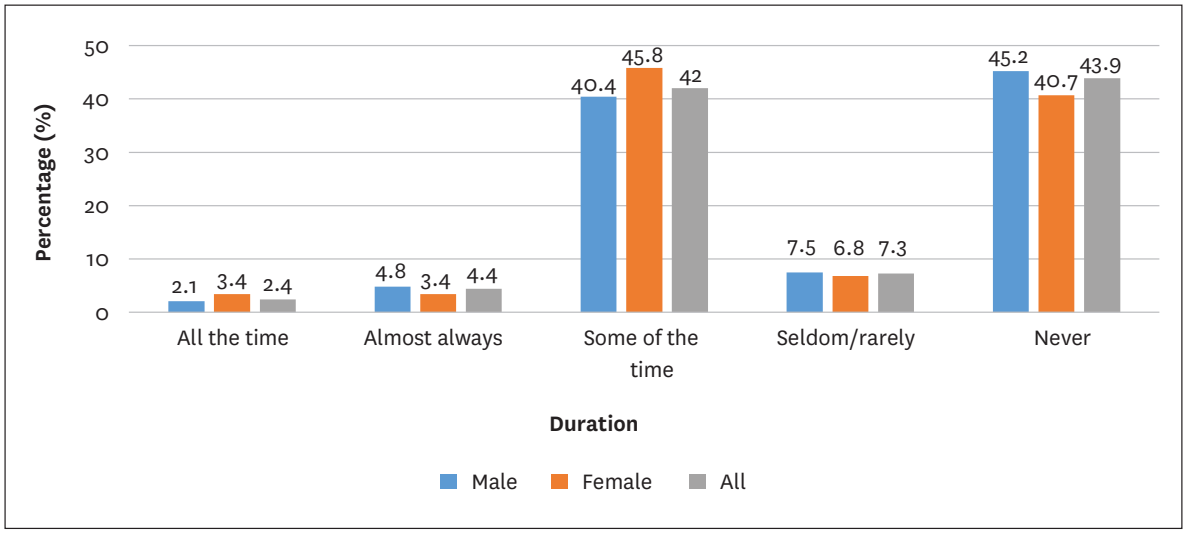

Figure 21. Frequency of skipping meals.

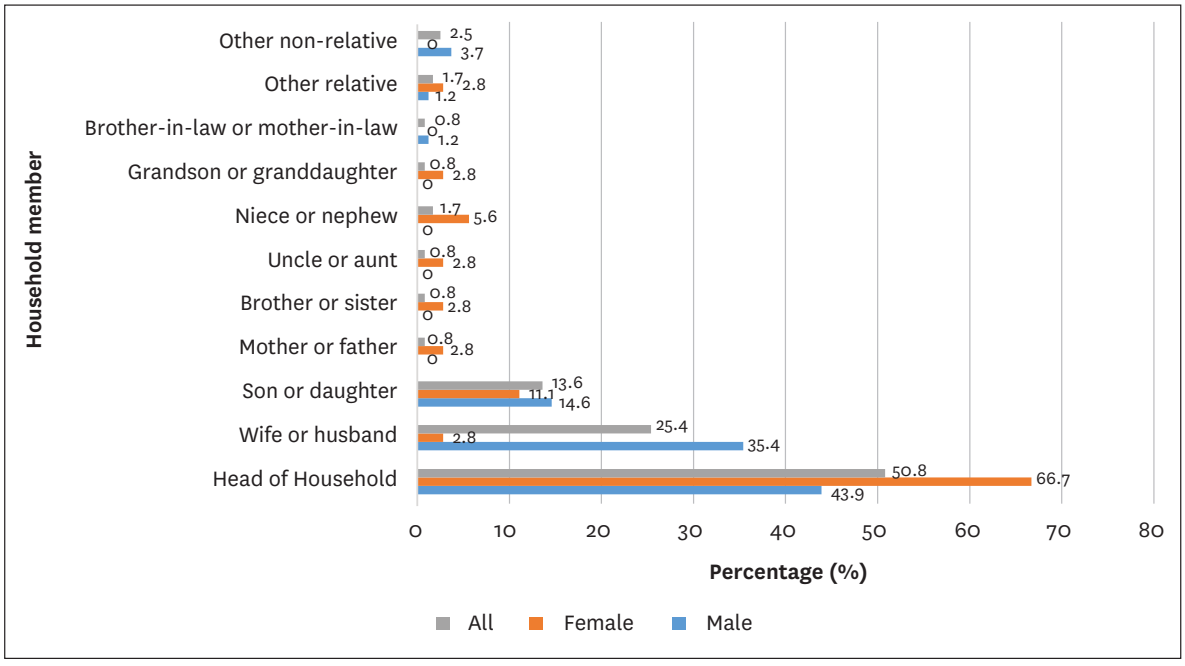

Figure 22. Household members who skip meals when there is food shortage.

Financial Coping Mechanisms

Loans were one of the instruments for coping with financial stress. On average, female-headed households borrowed CHS 945, much lower than male-headed households where the average amount borrowed stood at CHS 2,350 — nearly two and half times greater. As for the sources of loans, women solely borrowed from susu groups (42.9%), family (28.6%) and cooperatives (28.6%) as shown in Figure 23. It was interesting that even savings clubs (susu) which are usually led by women, the proportion of male-headed households that borrowed from this source was slightly higher than female-headed households; 46.2% and 42.9% respectively. Male-headed households were the only ones that accessed commercial and microfinance loans as well as loans from other sources.

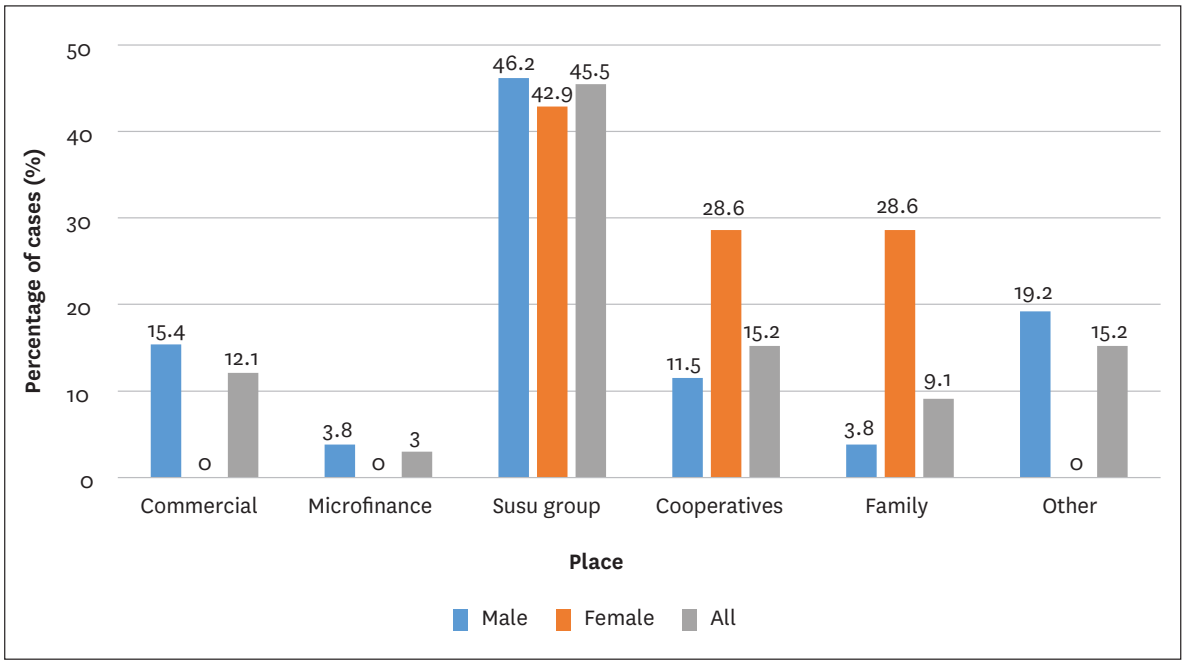

Figure 23. Sources of borrowing in the last 2 years.

Receipt of Remittance from Household Member during COVID-19

Over half of the female-headed households (50.8%) respondents received remittances compared to less than 16% of the male-headed households (Figure 24). While the percentage of households receiving remittances were similar in the pre- and post-COVID-19 periods, most respondents noted that the amount had been largely reduced as a result of low economic activities experienced by both local and international migrants.

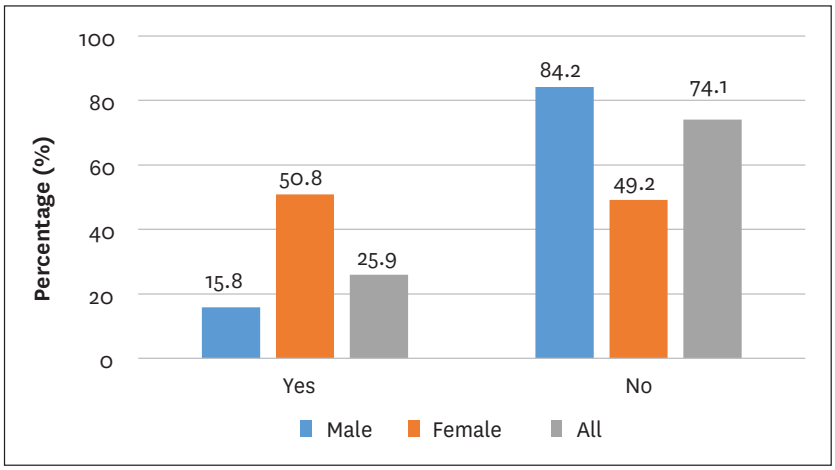

Figure 24. Receipt of remittances.

Discussion

This report has briefly introduced the pressures and drivers for water and sanitation services in the rural Ga South District.

The lived experiences of COVID-19 are markedly different for men and women. COVID-19 further exacerbated women's triple burden of reproductive, productive and community roles (Zibani 2016). Domestic violence was reported to have increased partly due to the confinement in smaller spaces, especially for the study community. A joint review by GSS and UNDP also showed that areas where lockdown had been enforced saw a 7% increase in domestic violence cases (GSS and UNDP 2020). The economic hardships as a result of the lockdown were cited as some of the contributing reasons in the rural study area. Most of the responses and COVID-19 state responses did not take such social and gender dimensions into account. It is therefore important that future responses to health emergencies such as COVID-19 and other global crises consider their differential impact on gender.

COVID-19 had repercussions on informal employment opportunities, with a differential impact for women and men. The Ghana Statistical Services in partnership with the United Nations Development Programme (GSS and UNDP 2020) noted that COVID-19 had an overall negative impact on business and employment opportunities. The government's free water was a noble but incomplete initiative, and did not benefit rural households which are not provided water by the Ghana Water Company (Amankwaa and Ampratwum 2020). Women and girls' water collection burden has been worsened, because more water was required to prevent COVID-19. Most women and girls were collecting water outside their homestead while also being increasingly responsible for childcare and other reproductive, productive and community responsibilities. COVID-19 stigma was prevalent with the majority of women and men not willing to get close to a person who would have recovered from the disease. The stigma might also have contributed to respondents hardly knowing anyone within their neighborhood who had been affected by COVID-19. It is therefore important that policy responses to crises such as COVID-19 are designed to be inclusive of gender and the accompanying differential power dynamics. There is also a need to better understand stigmas around health emergencies as they might undermine the data and scale of the impact of diseases such as COVID-19.

The loss of income has worsened food insecurity in the study area. Cities which are markets for agricultural produce, and went through lockdown, saw an about 84% decline in sales and a 74% decline in production. This had a knock-on effect on the informal as well as the agricultural sector. Women were slightly more impacted in terms of food assistance requirement. Women were also more likely to miss a meal as a result of the resultant food shortage due to COVID-19. The joint GSS and UNDP review of the COVID-19 impact in Ghana also noted that different arms of the government and local authorities received assistance to help cope with COVID-19 (GSS and UNDP 2020). The most common type of assistance in the lockdown districts was both cooked and uncooked food. Such efforts, however, were largely concentrated in urban areas; rural areas missed out on the food assistance. This will most likely have negative nutrition outcomes, especially with the research findings that women were more likely to miss a meal during food shortage. Shocks such as COVID-19 may worsen the gap between men and women (Ragasa and Lambrecht 2020). This therefor calls for deploying a robust gender lens towards social protection measures (Corburn et al. 2020; Hujo 2021; Leigh 2020; Méndez et al. 2020).

COVID-19 has negatively affected youth due to loss of employment as well as disruptions in studies. Youths who were working in the informal sector lost their employment opportunities. Those who were still going to school were also negatively affected as virtual learning required internet connectivity which was prevalent in most of the rural communities. Some education lessons were being offered through television, again not accessible to the majority in the study community. While Africa has often been touted as having a population dividend through its youth population, the dividend may only be achieved through rigorous planning which accounts for the youth (Aphunu and Atoma 2010; Fox et al. 2020; Heckert et al. 2020; Mueller and Thurlow 2019; Sumberg 2021).

Access to sanitation, which was not impacted by COVID-19, is a major concern for the study community. Most households had no access to a household toilet facility and were using the bush, or sometimes public facilities if they could afford them. Despite a new public facility close to completion, most of the people were using the bush or open pits which dug in the bush. This raises questions (Keraita et al. 2013; WaterAid 2009) on how perceptions and practices and use of toilets could be changed over time. It is important that responses to such infrastructural challenges consider the differential gender dimensions as well as further compounded health risks that are posed.

Conclusion

This social and economic study has endeavored to better understand the status of access to water and sanitation in Ga South District in the pre- and COVID-19 periods. The study area was selected as a rural community. The findings highlight the importance of better understanding the gendered and differential access to water and sanitation facilities in Ga South within the Greater Accra Metropolitan Area. The study further highlights the importance of a nuanced and gendered understanding of water and sanitation interventions, including the Free Water Initiative which seem less well-targeted by neglecting the poorer women and men in the rural areas. The findings call for responses to COVID-19 such as social protection measures, to take into account the differential impact on women, men, youths and other vulnerable people. This means that the responses have to be tailored to the varying and intersectional circumstances of the community members. COVID-19, in the study area, as also seen elsewhere, clearly points to the importance of social inclusion to ensure that infrastructure such as water and sanitation needs to be provided to all citizens. The research believes that this can offer a new trajectory for development in Ghana and beyond.

References

Amankwaa, G.; Ampratwum, E.F. 2020. COVID-19 'free water' initiatives in the Global South: What does the Ghanaian case mean for equitable and sustainable water services? *Water International* 45(7–8): 722–729. https://doi.org/10.1080/02508060.2020.1845076

Aphunu, A.; Atoma, C.N. 2010. Rural youths' involvement in agricultural production in Delta Central Agricultural Zone: Challenge to agricultural extension development in Delta State. *Journal of Agricultural Extension* 14(2): 46–55. https://doi.org/10.4314/jae.v14i2.64123

Awumbila, M. 2017. *Drivers of migration and urbanization in Africa: Key trends and issues*. Background Paper prepared for UN Expert Group Meeting on Sustainable Cities, Human Mobility and International Migration. Legon, Ghana: Centre for Migration Studies, University of Ghana.

Awumbila, M.; Owusu, G.; Teye, J.K. 2014. *Can rural-urban migration into slums reduce poverty? Evidence from Ghana*. Migrating out of Poverty project - Working Paper 13. London, U.K.: Department for International Development (DFID). Available at https://assets.publishing.service.gov.uk/media/57a089d340f0b649740002ae/WP13-migratingoutofpov.pdf (accessed on March 5, 2025).

Balasubramanya, S.; Stifel, D.; Alvi, M.; Ringler, C. 2021. The role of social identity in improving access to water, sanitation and hygiene (WASH) and health services: Evidence from Nepal. *Development Policy Review* 40(4): e12588. https://doi.org/10.1111/dpr.12588

Castro, F.G.; Kellison, J.G.; Boyd, S.J.; Kopak, A. 2010. A methodology for conducting integrative mixed methods research and data analyses. *Journal of Mixed Methods Research* 4(4): 342–360. https://doi.org/10.1177/1558689810382916

Connell, R. 2020. COVID-19/Sociology. *Journal of Sociology* 56(4): 745–751. https://doi.org/10.1177/1440783320943262

Corburn, J.; Vlahov, D.; Mberu, B.; Riley, L.; Caiaffa, W.T.; Rashid, S.F.;...Ayad, H. 2020. Slum health: Arresting COVID-19 and improving well-being in urban informal settlements. *Journal of Urban Health* 97: 348–357. https://doi.org/10.1007/s11524-020-00438-6

Creswell, J.W.; Plano Clark, V.L.; Gutmann, M.L.; Hanson, W.E. 2003. Advanced mixed methods research designs. In: Tashakkori, A.; Teddlie, C. (eds.) *Handbook of mixed methods in social and behavioral research*. Thousand Oaks, U.S.A.: Sage Publications. pp.209–240.

Doss, C. 2013. *Data needs for gender analysis in agriculture*. IFPRI Discussion Paper 1261. Washington, D.C., U.S.A.: International Food Policy Research Institute (IFPRI). https://hdl.handle.net/10568/153478

Duti, V. 2020. Opinion: A complex WASH sector could hamper Ghana's fight against COVID-19. Devex. Available at https://www.devex.com/news/opinion-a-complex-wash-sector-could-hamper-ghana-s-fight-against-covid-19-97396 (accessed on March 5, 2025).

Fox, L.; Mader, P.; Sumberg, J.; Flynn, J.; Oosterom, M. 2020. *Africa's 'youth employment' crisis is actually a 'missing jobs' crisis*. Brooke Shearer Series 9. Washington, D.C., U.S.A.: The Brookings Institution. Available at https://www.brookings.edu/wp-content/uploads/2020/09/Youth-employment-crisis_09.08.pdf (accessed on March 5, 2025).

Galasiński, D.; Kozłowska, O. 2010. Questionnaires and lived experience: Strategies of coping with the quantitative frame. *Qualitative Inquiry* 16(4): 271–284. https://doi.org/10.1177/1077800409354068

GSS (Ghana Statistical Service). 2014. *Urbanisation: Population and housing census report*. Accra, Ghana: Ghana Statistical Service.

GSS; UNDP (United Nations Development Programme). 2020. *Brief on COVID-19 Local Economies Tracker Wave 1*. Accra, Ghana: Ghana Statistical Service.

Heckert, J.; Pereira, A.; Doss, C.; Myers, E.C.; Quisumbing, A. 2020. Structural transformation and gendered transitions to adulthood among rural youth: Cross-national evidence from low- and middle-income countries. *The Journal of Development Studies* 57(4): 614–634. https://doi.org/10.1080/00220388.2020.1808196

Howard, M.C. 2021. Gender, face mask perceptions, and face mask wearing: Are men being dangerous during the COVID-19 pandemic? *Personality and Individual Differences* 170: 110417. https://doi.org/10.1016/j.paid.2020.110417

Hujo, K. 2021. Social protection and inequality in the global South: Politics, actors and institutions. *Critical Social Policy* 41(3): 343–363. https://doi.org/10.1177/0261018321100989 9

Kangmennaang, J.; Bisung, E.; Elliott, S.J. 2020. 'We are drinking diseases': Perception of water insecurity and emotional distress in urban slums in Accra, Ghana. *International Journal of Environmental Research and Public Health* 17(3): 890. https://doi.org/10.3390/ijerph17030890

Keraita, B.; Jensen, P.K.M.; Konradsen, F.; Akple, M.; Rheinländer, T. 2013. Accelerating uptake of household latrines in rural communities in the Volta Region of Ghana. *Journal of Water, Sanitation and Hygiene for Development* 3(1): 26–34. https://doi.org/10.2166/washdev.2013.035

Leahy, C.P. 2021. The afterlife of interviews: Explicit ethics and subtle ethics in sensitive or distressing qualitative research. *Qualitative Research* 22(5): 777–794. https://doi.org/10.1177/14687941211012924

Leigh, J. 2020. 'It was the best of times; it was the worst of times': The impact of Covid-19 on families in the child protection process. *Qualitative Social Work* 19(5–6): 779–783. https://doi.org/10.1177/1473325020953657

Lokot, M. 2021. Whose voices? Whose knowledge? A feminist analysis of the value of key informant interviews. *International Journal of Qualitative Methods* 20. https://doi.org/10.1177/16094069209487775

Machdar, E.; van der Steen, N.P.; Raschid-Sally, L.; Lens, P.N.L. 2013. Application of quantitative microbial risk assessment to analyze the public health risk from poor drinking water quality in a low income area in Accra, Ghana. *Science of the Total Environment* 449: 134–142. https://doi.org/10.1016/j.scitotenv.2013.01.048

Méndez, M.; Flores-Haro, G.; Zucker, L. 2020. The (in)visible victims of disaster: Understanding the vulnerability of undocumented Latino/a and indigenous immigrants. *Geoforum* 116: 50–62. https://doi.org/10.1016/j.geoforum.2020.07.007

Molden, D. (Ed.) 2007. *Water for food, water for life: A comprehensive assessment of water management in agriculture*. London, U.K.: Earthscan; Colombo, Sri Lanka: International Water Management Institute (IWMI). 645p. https://hdl.handle.net/10568/36463

Morgan, A.K. 2020. Making COVID-19 prevention etiquette of social distancing a reality for the homeless and slum dwellers in Ghana: Lessons for consideration. *The International Journal of Justice and Sustainability* 25(7): 536–539. https://doi.org/10.1080/13549839.2020.1789854

Morse, J.M.; Wolfe, R.R.; Niehaus, L. 2006. Principles and procedures of maintaining validity for mixed-method design. In: Curry, L.; Shield, R.; Wetle, T. (eds.) *Improving aging and public health research: Qualitative and mixed methods*. Washington, D.C., U.S.A.: American Public Health Association; Gerontological Society of America. pp.65–78.

Mueller, V.; Thurlow, J. (Eds.) 2019. *Youth and jobs in rural Africa: Beyond stylized facts*. Oxford, U.K.: Oxford University Press.

Osella, F.; Osella, C. 2000. Migration, money and masculinity in Kerala. *Journal of the Royal Anthropological Institute* 6(1): 117–133. https://www.jstor.org/stable/2660768

Plano Clark, V.L.; Huddleston-Casas, C.A.; Churchill, S.L.; O'Neil Green, D.; Garrett, A.L. 2008. Mixed methods approaches in family science research. *Journal of Family Issues* 29(11): 1543–1566. https://doi.org/10.1177/0192513X08318251

Ragasa, C.; Lambrecht, I. 2020. COVID-19 and the food system: Setback or opportunity for gender equality? *Food Security* 12: 877–880. https://doi.org/10.1007/s12571-020-01089-w

Rutayisire, E.; Nkundimana, G.; Mitonga, H.K.; Boye, A.; Nikwigize, S. 2020. What works and what does not work in response to COVID-19 prevention and control in Africa. *International Journal of Infectious Diseases* 97: 267–269. https://doi.org/10.1016/j.ijid.2020.06.024

Saba, C.K.S. 2020. COVID-19: *Implications for food, water, hygiene, sanitation, and environmental safety in Africa - A case study in Ghana*. Tamale, Ghana: Department of Biotechnology, Faculty of Agriculture, University for Development Studies. Available at https://www.preprints.org/manuscript/202005.0369/v1 (accessed on March 11, 2025).

Sumberg, J. (Ed.) 2021. *Youth and the rural economy in Africa: Hard work and hazard*. Boston, U.S.A.: CABI. 184p.

Tashakkori, A.; Teddlie, C. 2010. Putting the human back in "human research methodology": The researcher in mixed methods research. *Journal of Mixed Methods Research* 4(4): 271–277. https://doi.org/10.1177/1558689810382532

UN DESA (United Nations, Department of Economic and Social Affairs, Population Division). 2017. *World population prospects: The 2017 revision - Key findings and advance tables*. Working Paper ESA/P/WP/248. New York, U.S.A.: Department of Economic and Social Affairs, United Nations.

UN Women. 2020. *From insights to action: Gender equality in the wake of COVID-19*. New York, U.S.A.: UN Women. Available at https://digitallibrary.un.org/record/3928015/files/gender-equality-in-the-wake-of-covid-19-en.pdf (accessed on March 11, 2025).

WaterAid. 2009. *Towards total sanitation: Socio-cultural barriers and triggers to total sanitation in West Africa*. London, U.K.: WaterAid. 16p.

Werner, M.; Strauss, K.; Parker, B.; Orzeck, R.; Derickson, K.; Bonds, A. 2017. Feminist political economy in geography: Why now, what is different, and what for? *Geoforum* 79: 1–4. https://doi.org/10.1016/j.geoforum.2016.11.013

Wright, J.A.; Gundry, S.W.; Genthe, B.; du Preez, M.; Moyo, S.; Potgieter, N.; Ndamba, J. 2004. Use of handheld computers for collecting water quality data in developing countries. *Water International* 29(4): 517–522. https://doi.org/10.1080/02508060408691815

Yeleliere, E.; Cobbina, S.J.; Duwiejuah, A.B. 2018. Review of Ghana's water resources: The quality and management with particular focus on freshwater resources. *Applied Water Science* 8: 93. https://doi.org/10.1007/s13201-018-0736-4

Zibani, T. 2016. *The triple burden and triple role of women*. Available at https://www.empowerwomen.org/en/community/discussions/2016/11/the-triple-burden-andtriple-role-of-women (accessed on May 12, 2021).

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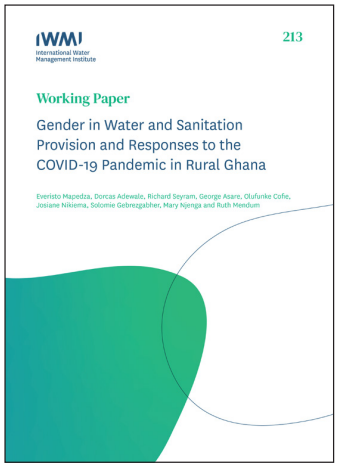

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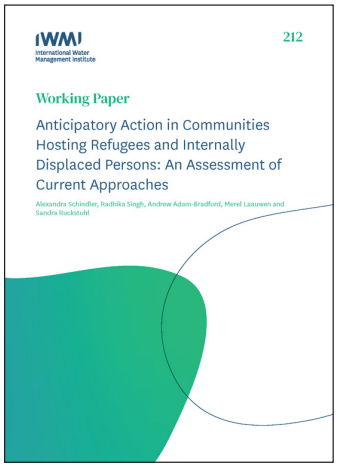

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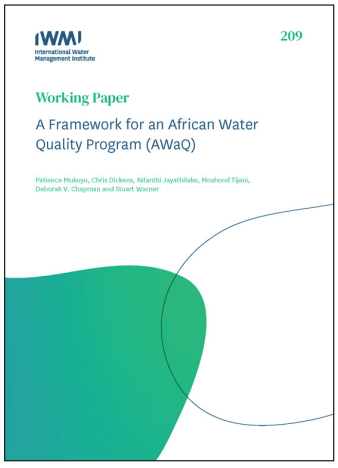

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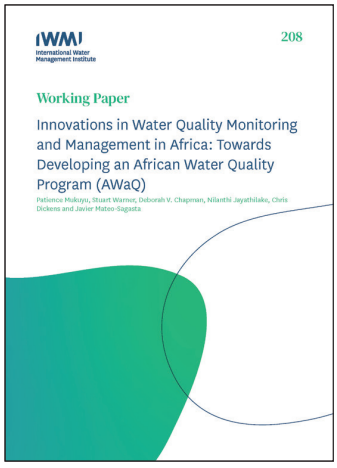

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