

COVID-19 Vaccines Hesitancy Among Healthcare Workers in Ethiopia and Associated factors

Brief Report

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CCP /Ethiopia

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Abbreviations

AOR	Adjusted Odds Ratio
CCP	Center for Communication Programs
CI	Confidence Interval
COVID-19	Coronavirus 2019
HCWs	Healthcare workers
HH	Household
MOH	Ministry of Health
SBCC	Social and Behavior Change Communication
TV	Television
USAID	United States Agency for International Development
WHO	World Health Organization

Executive summary

Johns Hopkins Center for Communication Programs (CCP) has implemented a COVID-19 vaccine promotion project in Ethiopia with funding and technical assistance from the United States Agency for International Development (USAID) through the global Breakthrough ACTION mechanism. From February to March 2022, CCP/Ethiopia conducted a cross-sectional facility-based assessment of COVID-19 vaccine hesitancy among healthcare workers (HCWs). The assessment aimed to inform the risk communication and vaccine promotion programs in Ethiopia. Mobile phone assisted interviews were used to collect information regarding exposure to COVID-19 messages, risk perceptions and behavioral practices that are relevant to COVID-19 vaccines. A total of 500 randomly sampled healthcare workers were interviewed from selected health centers and hospitals in five clusters of major regions of Ethiopia (Bahir Dar, Hawasa, Jimma, Assossa and Addis Ababa). About 100 randomly sampled HCWs were interviewed from each cluster.

Key findings

Exposure to information about COVID-19 vaccines, and sources: Almost all interviewed HCWs reported exposure to COVID-19 vaccine messages from different sources. The level of exposure varied by gender and type of media. Nealy half of interviewed HCWs (52%) were often exposed to messages about COVID-19 vaccines aired through radio or TV, 47% through social media, 32% through internet, 29% through newspapers and 28% through family or friends. About 37% HCWs were often exposed to three or more sources, with significant variation by gender (32% female, and 43% male). Thirty percent of interviewed HCWs had trainings or workshops on COVID-19 vaccines organized by the Government or partners.

Perceptions on importance, safety and side effects of COVID vaccines: HCWs were asked their level of agreement for statements about importance, safety and severe side effects of COVID-19 vaccines, using categorical response options of “high,” “moderately,” “little” and “not at all.”

- For the statement ‘COVID-19 vaccines are important’: 41% highly, 49% moderately, 6% a little and 3% not at all agreed with the statement.
- For the statement ‘COVID-19 vaccines available in Ethiopia are safe:’ 25% highly, 58% moderately, 14% a little and 2% not at all agreed.
- For the statement ‘COVID-19 vaccines have no severe side effects:’ 9% highly, 38% moderately, 46% a little and 8% not at all agreed.

The majority of HCWs (67%) believed that COVID-19 vaccines can cause blood clots; 51% believed that its safety is not confirmed; 47% believed it causes long term severe side effects; and about a quarter (26%) HCWs relate COVID-19 vaccines with 666 “bad spirit.”

Family and community support: Family and community support are among key determinants of behavior. In this assessment, HCWs were asked about their perceived support from family, friends, religious leaders for them to take COVID-19 vaccines; and their perceptions on the uptake of COVID-19 vaccines by other HCWs. Findings indicated that about half of respondents (49%) of HCWs thought that most of their family, friends, and /or religious leaders wanted them to get COVID -19 vaccines. The majority of HCWs (62%) also thought that most other healthcare workers had COVID-19 vaccines.

Risk perception towards COVID-19 and its severity: About 47% of HCWs had high perceived risk of getting infected with COVID-19 virus, while 30% had moderate and 23% had low perceived risk. Similarly, 54% of HCWs had high, 37% moderate, and 9% low perceived severity on health issues related to COVID-19 infection respectively.

Uptake and willingness to receive COVID-19 vaccines: Interviewed HCWs were asked their uptake of COVID-19 vaccines. More than half of interviewed HCWs (66%) reported that they had completed the recommended doses of COVID-19 vaccines while 12% had started vaccination but didn't complete recommended doses, and 22% were not yet vaccinated. Confidence on the efficacy of COVID-19 vaccines in minimizing the severity of COVID-19 disease, high exposure to COVID-19 infection, and intention to protect self and family from COVID-19 infection were the main motivating factors for HCWs to uptake COVID-19 vaccination.

Vaccine hesitancy and willingness for COVID-19 vaccines were measured from those HCWs who didn't complete recommended doses or who didn't yet start COVID-19 vaccines (i.e., 36% of HCWs). For those HCWs who didn't complete the recommended doses or were not yet vaccinated, we asked their willingness to receive COVID-19 vaccines if they would be available for them. According to their responses, 43% of HCWs want to take COVID-19 vaccines, 47% don't want to take COVID-19 vaccines; and 10% they are not sure whether to take it or not. The response implies that majority (57%) of HCWs who didn't yet complete the recommended doses of COVID-19 vaccines were hesitant.

The findings also indicated that hesitancy to COVID-19 vaccination was found higher among female HCWs (64%) than male HCWs (46%). Highest hesitancy was measured in Addis Ababa (89%) and Bahir Dar (61%) than other clusters. Concerns about safety of COVID-19 vaccines (49%), fear of long-term side effects (37%), lack of confidence on COVID vaccines efficacy (41%) were among the major reasons for hesitancy or for the decision not taking COVID-19 vaccines.

Predictors for uptake and willingness to get COVID-19 vaccines: The study used binary logistic regression analysis to identify key predictors for uptake and willingness to get COVID-19 vaccines. Potential predictors such as exposure to COVID-19 messages, perceived risk of getting COVID-19, perception of HCWs toward COVID-19 vaccines and basic demographic variables such as age, sex and education of HCWs were included in the model.

Findings indicated that among unvaccinated HCWs, willingness to get COVID-19 vaccines was significantly dependent on respondents' gender, confidence regarding the safety of COVID-19 vaccines and misperceptions related to 666. Male HCWs had higher odds to be willing to receive COVID-19 vaccines than female HCWs, AOR = 2.1, 95% CI: 1.03-4.4. Similarly, respondents who have confidence on vaccine safety had higher odds to be willing to receive COVID-19 vaccines, AOR= 2.7, 95% CI: 1.2-5.9; and those HCWs who had no misperception relating vaccines with 666 had also higher odds AOR = 2.6, 95% CI: 1.13-5.8 to be willing to receive vaccines than their counterparts.

Age, fear of severe long-term side effects and exposure to three or more media sources about COVID-19 vaccines were found significant predictors for HCW's uptake of COVID-19 vaccines. HCWs aged 30 years or older (AOR= 1.5, 95% CI: 1.04-2.3), those who had lower fear of severe side effects (AOR= 1.8, 95% CI: 1.2-2.8) and those who had exposure for three or more sources of media about COVID-19 vaccines (AOR=1.7, 95% CI: 1.1-2.7) were more likely to uptake COVID-19 vaccines than younger-aged HCWs, those who had higher fear of severe side effects and those who had media exposure for 2 or lesser sources respectively.

Conclusions.

- Majority of healthcare workers (66%) completed recommended doses of COVID-19 vaccines.
- Of the total unvaccinated HCWs, 57% were hesitant to take COVID-19 vaccines.
- Lower willingness was found to take COVID-19 vaccine in Addis Ababa and Bahir Dar clusters.
- Only a third of healthcare workers (30%) received training on COVID-19 vaccines.
- Radio/TV and social media are major sources of information for HCWs regarding COVID-19 vaccines.
- Being male, having confidence about vaccine safety, and having no misperceptions related to 666 positively predicted willingness to receive COVID-19 vaccines.
- Old age, low fear of long-term side effects and exposure to three plus media sources had significant association with COVID-19 vaccines uptake.

Recommendations

Based on the findings from the assessment, the following recommendations emerged:

- More research is needed to understand why there is lower willingness to COVID-19 vaccines in Addis Ababa and Bahir Dar clusters.
- Social and Behavior Change Communication (SBCC) interventions should focus on addressing misperceptions such as 666, side effects, and safety.
- It is recommended to use a mix of channels radio/TV and social media channels in order to reach health care providers with messages about COVID-19 vaccines.
- Training of healthcare workers on COVID-19 vaccines is important to overcome vaccine hesitancy.
- Facilitating dialogues and consultative workshops among HCWs will help to address misperceptions on COVID vaccines.

Background

Johns Hopkins Center for Communication Programs (CCP) leads Breakthrough ACTION, the global flagship SBCC program funded by the United States Agency for International Development (USAID). Through the global Breakthrough ACTION mechanism, CCP has been implementing the risk communication and community engagement project in Ethiopia since March 2020. The project has designed and disseminated mass and mid media interventions and community engagement activities focusing on the prevention and control of COVID-19 including promotion of COVID-19 vaccines.

CCP conducted an assessment on healthcare workers (HCWs)¹ hesitancy on COVID-19 vaccines in health centers and hospitals in March and February 2022. The assessment aimed to gather reliable evidence on healthcare worker's hesitancy about COVID-19 vaccines that will inform the design and implementation of risk communication campaigns and materials. The assessment was conducted in collaboration with the national communication technical working group. This report covers main findings of the assessment.

Objectives

- Determine the level of hesitancy on COVID-19 vaccines among HCWs in health centers and hospitals in Ethiopia.
- Identify key determinants for COVID-19 vaccines hesitancy among HCWs.

Methodology

A cross-sectional facility-based assessment was conducted using face-to-face interviews of 500 randomly sampled healthcare workers in five clusters of major regions of Ethiopia: Bahir Dar, Hawassa, Jimma, Assosa and Addis Ababa. The total sample size was equally allocated to each cluster to get a sufficient sample size for cluster level descriptive analysis. The following sampling procedure was followed in the assessment:

1. Hospitals and health centers were listed in each cluster (major towns and adjacent woredas within 50km radius from the major town). The listing included both public and private health facilities in the selected major towns and nearby woredas.
2. Two hospitals and eight health centers were randomly sampled from the total list of health centers and hospitals in each cluster (50% public and 50% private).
3. All technical HCWs such as nurses, health officers, midwives, doctors, pharmacists, laboratory technicians, etc. were listed in each sampled health facility.
4. The total target of 100 sample per cluster was proportionally allocated to the size of HCWs to selected health facilities within each cluster.

¹ HCWs refers technical healthcare providers at health centers and hospitals that included nurses, midwives, doctors, laboratory technicians, pharmacists, health officers, and anesthetists

5. The sampled HCWs from each health facility was selected using a systematic random sampling technique.
6. About 100 randomly sampled HCWs were interviewed from each cluster.

The interview focuses on the basic demographics of study participants such as age, education, responsibility in the health facility, exposure to messages about COVID-19 vaccines, risk perceptions of COVID-19, perceptions of vaccines: efficacy of vaccines, side effects, safety and uptake of COVID-19 vaccines among sampled HCWs. Trained data collectors who have at least a first degree with intensive data collection experience conducted face-to-face interviews with sampled HCWs. A semi-structured questionnaire was used for interview.

Interviewers training

CCP provided in-house training for interviewers and supervisors from February 17-18, 2022. The training covered presentations on survey ethics, sampling procedure, interview skills and discussion on the instruments how to collect data using the KoboCollect mobile technology. Comments on the instrument were incorporated before actual data collection. Five teams, each team with supervisor and three data collectors, conducted the data collection from February 20 to March 3, 2022.

Data analysis

Data were analyzed in SPSS Version 26. Univariate, bivariate and multivariate analysis were done to compute point and interval estimates of the variable of interests, for comparison of estimates among the different types of the healthcare workers and to identify key predictors for preventive behaviors respectively. Findings of the assessment were presented in tables and graphs with short description in the results section.

Definition of key terms

COVID-19 vaccine hesitancy refers to a **delay in acceptance or refusal** of vaccination despite the availability of vaccination services. It is measured from unvaccinated population or those who didn't complete recommended dose/s of the COVID-19 vaccines.

COVID-19 vaccine uptake refers to the proportion of population who received COVID-19 vaccine services.

COVID-19 vaccines acceptance refers to those who are willing to get vaccination services or completed required doses.

Results

Study participants' demographics

The study assessed basic demographic characteristics of study participants. Table 1 indicates that about 60% of interviewees were women. Nearly a quarter (48%) respondents were within the age range of 20-29; while 42% from 30-39, and 10% were 40 years or older. Most of the respondents (70%) had a first degree and 25% had a diploma. More than half (68%) of the respondents were married or cohabiting. In terms of their role in the health facility, 43% were nurses, 12% midwives, 11% Health Officers, 11% pharmacists, and 8.2% medical doctors. Most of the respondents (86%) were from public health facilities.

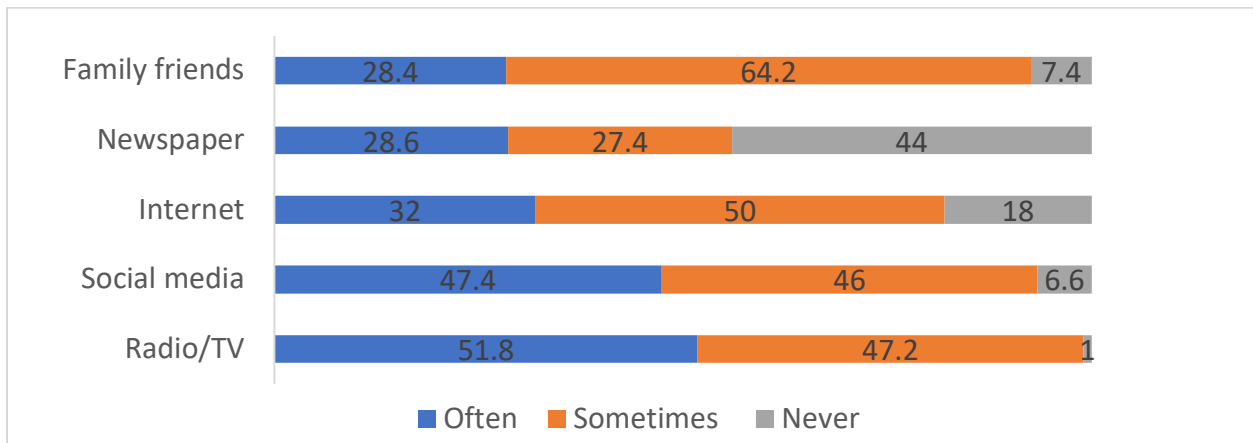
Table 1 Study participants demographics (N=500)

Socio-Demographic characteristics		N	%
Sex	Female	298	59.6
	Male	202	40.4
Age	20-29	239	47.8
	30-39	211	42.2
	40 or above	50	10
Education	Diploma	126	25.2
	Degree	350	70
	Master's	23	4.6
	PHD	1	0.2
Marital Status	Married/Cohabiting	340	68
	Single	156	31.2
	Widowed/divorced	4	0.8
Role in facility	Nurse	215	43
	Midwife	60	12
	Health Officer	53	10.6
	Medical Doctor	41	8.2
	HEW	9	1.8
	Pharmacist	48	9.6
	Laboratory	49	9.8
Facility Type	Other	25	5
	Public Hospital	227	45.4
	Private Hospital	27	5.4
	Public Health center	203	40.6
	Private Clinic	43	8.6

Exposure to messages about COVID-19 vaccines

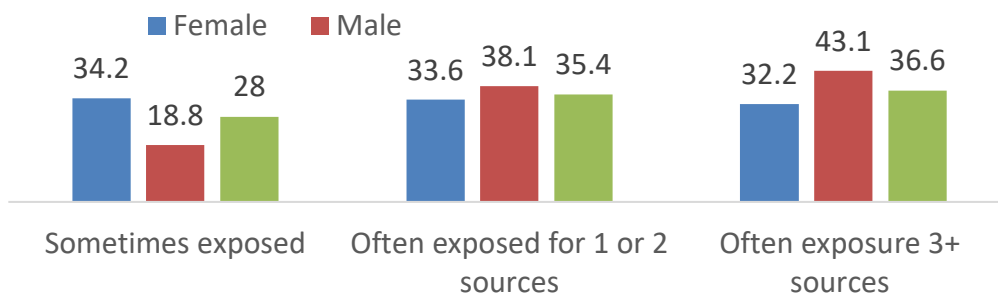
Level of exposure to messages about COVID-19 vaccines was assessed using a three-point categorical variable: 'often,' 'sometimes,' and 'never' across five common sources of information about COVID-19 vaccines. All interviewed HCWs reported that they had exposure to messages about COVID-19 vaccines from one or multiple sources. About 52% of HCWs received messages about COVID-19 vaccines from radio or TV, while 47% of HCWs received messages from social media, 32% from internet, 29% from newspapers and 28% from family or friends (Figure 1).

Figure 1: Percent HCWs exposure to COVID-19 related messages (N=500)



About 37% of respondents reported being often exposed to three plus sources. Responses varied significantly by the gender of respondents: 43% of male HCWs reported high exposure compared with 32% of female HCWs. Male HCWs had more exposure to messages about COVID-19 vaccines than female HCWs (Figure 2). In addition, 29.8% of HCWs reported that they attended trainings or workshops about COVID-19 vaccines that were organized by Ministry of Health or partners.

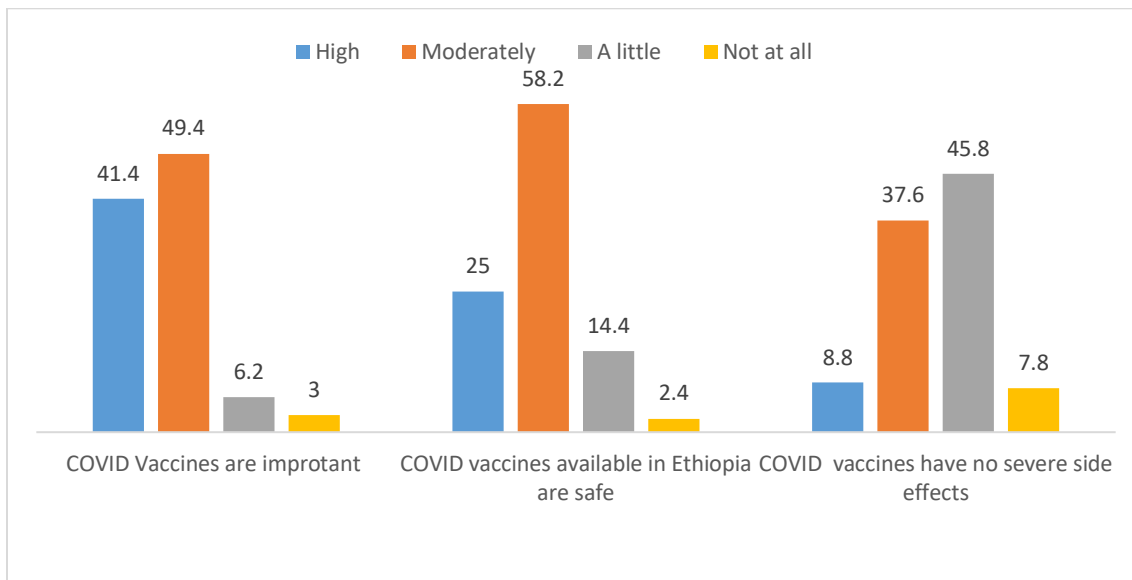
Figure 2: Percent exposure to COVID-19 vaccine related messages in Ethiopia (N=500)



Healthcare workers' perceptions of COVID-19 vaccines

Healthcare workers' perceptions about importance, safety, and potential long term side effects of COVID-19 vaccines was assessed using a four-point scale: high, moderate, a little and not all. As shown in figure 3 below 41% HCWs had high, 49% moderate and 9% a little or no confidence of its importance. Regarding safety of COVID-19 vaccines in Ethiopia, 25% had high, 58% moderate and 17% a little or no confidence on COVID-19 vaccines safety. Only 9% of interviewed HCWs had high agreement with the statement "COVID-19 vaccines had no severe side effects," while 38% had moderate, 49% had little and 9% had no agreement to the statement. Regarding to the COVID 19 vaccines have no severe side effects: 8% reported high; 46% moderate, 37.6% a little and 8.8% not agreed at all to the statement. However, despite HCWs' concerns, most of interviewed HCWs (94%) reported that they promoted COVID-19 vaccines for their clients and co-workers as well as for their adult household members. The main reasons for the HCWs who did not want to promote COVID-19 vaccines to their family or clients were concern about safety, fear of side effects and low confidence in efficacy.

Figure 3: Percent HCWs' perceptions on COVID-19 vaccine importance, side effects and safety in Ethiopia (N=500)

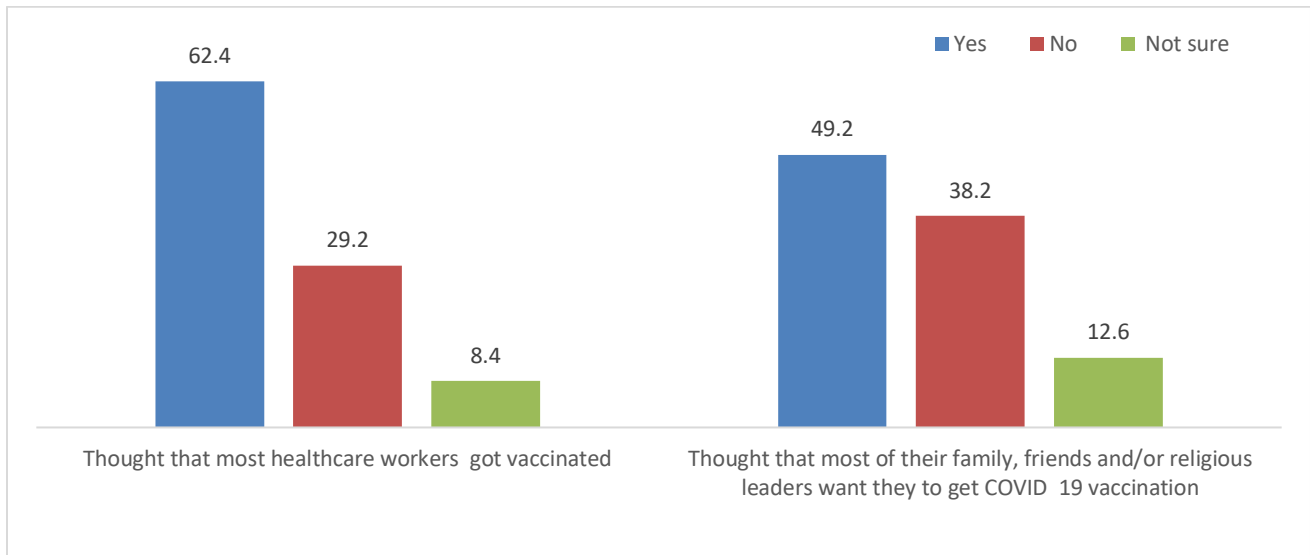


Family and social support

Perceived family and social support have a critical role on individual's decision to practice or not to practice a particular behavior. In this assessment respondents were asked their perception towards the support by their family, friends or religious leaders for them to take COVID-19 vaccines and what they think about uptake of COVID-19 vaccines by other HCWs. Figure 4 indicated that nearly half of respondents (49%) perceived that their family, friends, and

religious leaders support them to get COVID-19 vaccines. About 62% of interviewed HCWs perceived that most of other HCWs took COVID-19 vaccines.

Figure 4: Percent perceived family and social support for HCWs to take COVID-19 vaccines (N=500)



The assessment further explored the reasons why respondents do not perceive that their family, friends and religious leaders do not want them to get COVID-19 vaccines. Table 2 below summarizes the main reasons that their family, friends of religious leaders may not want them to get COVID-19 vaccines: fear of side effects (45%), no confidence in vaccines safety (31%), and religion or spiritual (666 bad spirit) fears (12%).

Table 2: Reasons why healthcare workers did not get vaccinated (n=166)

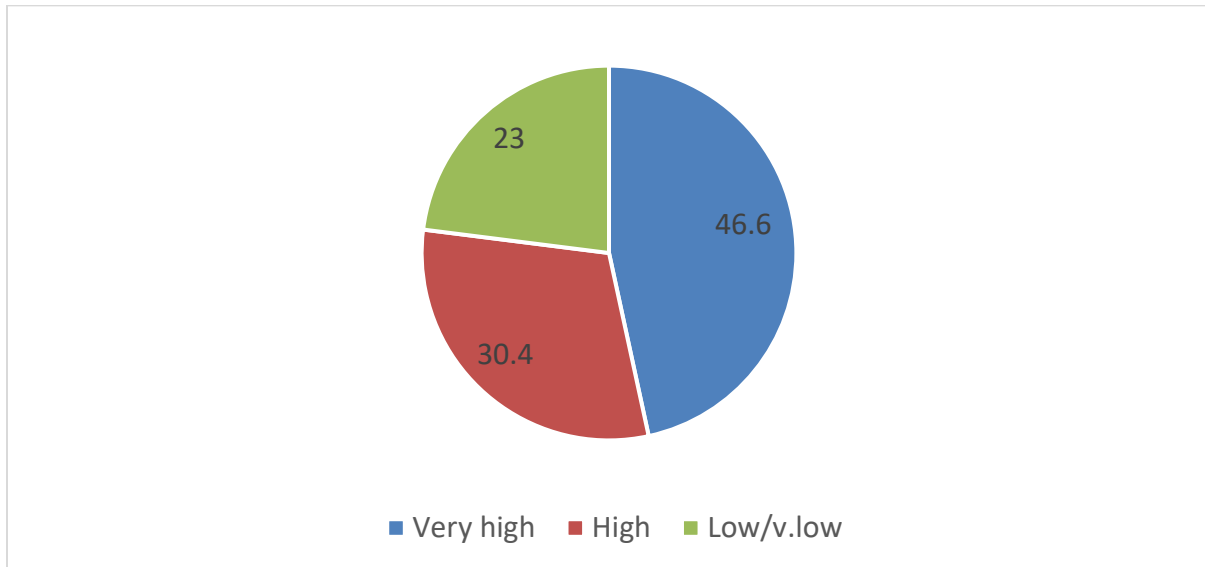
Reasons	%
Fear of severe side effects (blood clotting, heart failure, infertility, death)	45%
No confidence in vaccine safety	31%
It is religious/spiritual (666 and spirits)	12%
Lack of awareness	6%
Low perceived risk of COVID-19	2%
Not recommended for lactating mothers, pregnant and who have chronic diseases	2%
Practice other preventive methods (Preferring and washing, face mask and using traditional medicine)	1%

Risk susceptibility and severity of COVID-19

Perceived risk of infection and perceived severity are the major factors that motivate people to uptake preventive services. Respondents were asked how likely they are to be at risk of COVID-

19. Figure 5 below indicates that a significant percentage of respondents (46.6%) reported that they have low or very low risk to get infected with coronavirus, while 30.4% reported high risk and 23% reported very high risk.

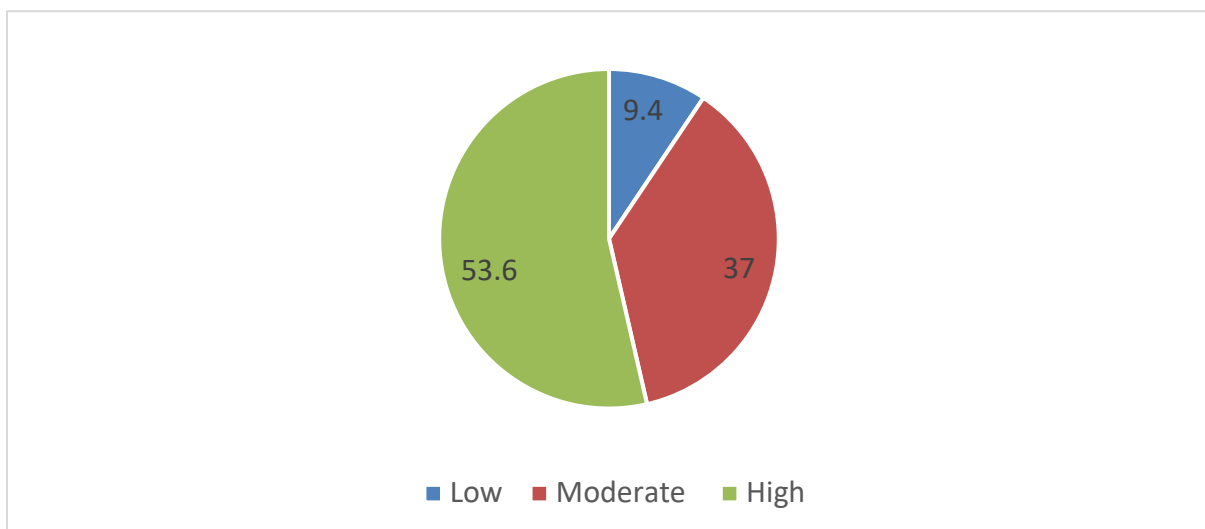
Figure 5: HCWs' percent risk of susceptibility to COVID-19 (N=500)



HCWs' perceived severity on COVID-19 (N=500)

The study assessed how dangerous is COVID-19 from the respondent's perspective. As indicated in Figure 6, 54% of HCWs reported that it is highly dangerous, 37% reported that it is moderately dangerous and the remaining 9.4% reported that it is a little dangerous.

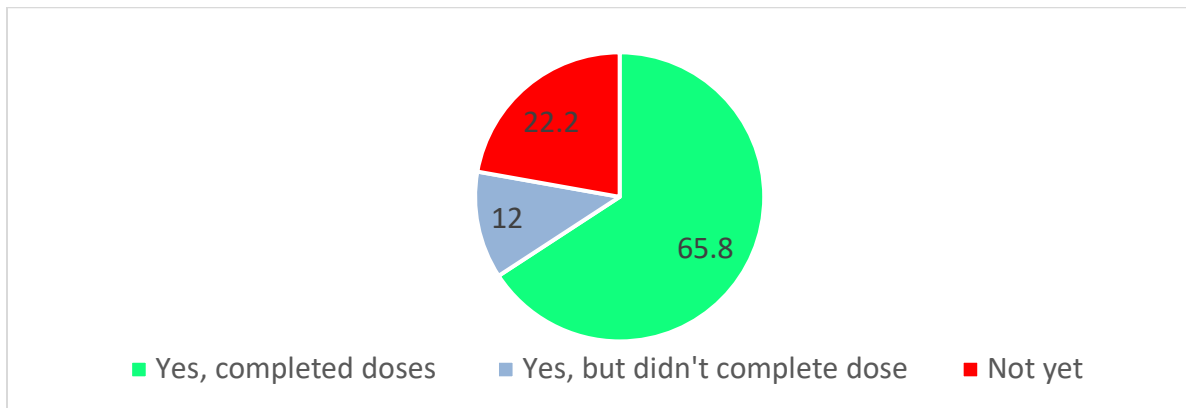
Figure 6: Perceived severity of COVID-19 (N=500)



HCWs' experience of COVID-19 vaccination and willingness to take COVID-19 vaccines:

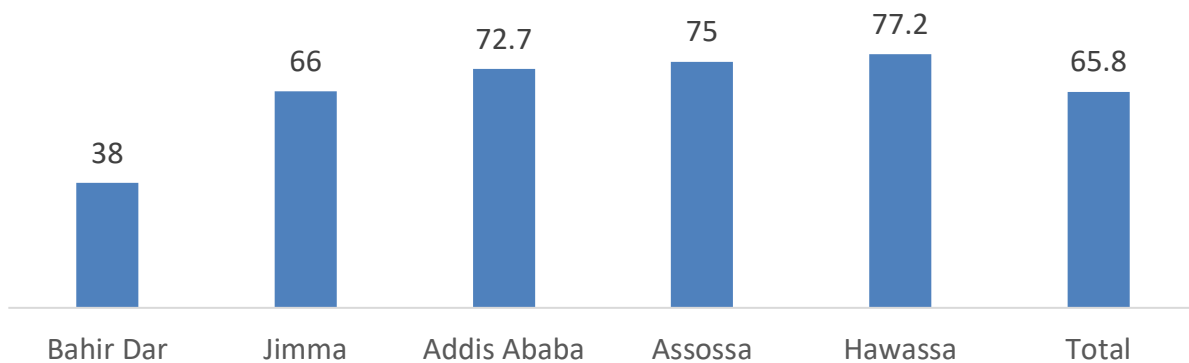
Respondents were asked about their COVID-19 vaccination status. Figure 7 shows that the majority (65.8%) of respondents reported that they had completed the recommended doses of COVID-19 vaccines; 12% reported that they received a single dose of COVID-19 vaccines and did not complete; and 22.2% reported that they didn't receive any COVID-19 vaccines.

Figure 7: Percent uptake of COVID-19 vaccines among HCWs (N=500)



HCWs' uptake of COVID-19 vaccines shows significant variation across geographic clusters (Figure 8). The highest uptake was found in Hawassa (77%), followed by Assossa (75%) and Addis Ababa (73%). The lowest uptake among HCWs was found in Bahir Dar (38%). The recent conflict in Amhara region might contribute to the low uptake of COVID-19 vaccines in the Amhara region. Intention to minimize the severity of COVID-19 (43%), high perceived risk of infection to COVID-19 (30%) and intention to protect family (27%) were the most frequently mentioned reasons for HCWs to uptake COVID-19 vaccines.

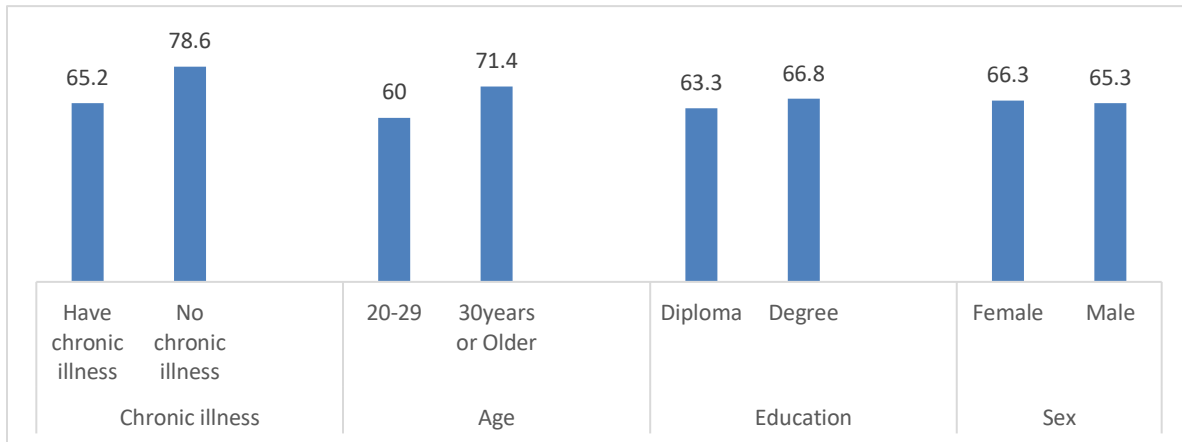
Figure 8: HCWs' COVID-19 vaccines uptake by geography cluster (N=500)



COVID-19 vaccines uptake by major demographic variables

COVID-19 vaccines uptake significantly varied by age of HCWs and their status of chronic diseases. Older HCWs had higher uptake of COVID-19 vaccines than younger (71% versus 60%). Likewise, HCWs who have chronic illness had higher uptake of COVID-19 vaccines than those who haven't (77% versus 65%). No significant variation was observed on the uptake of COVID-19 vaccines by sex and education of HCWs.

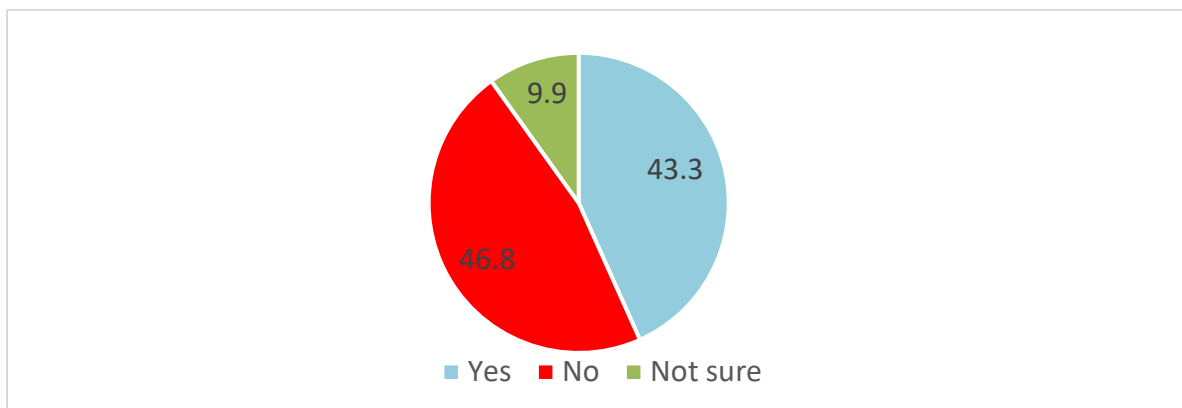
Figure 9: Percent of vaccine uptake by basic demographic factors



HCWs' hesitancy or willingness to get COVID-19 vaccines

For those who didn't complete the recommended doses and those who didn't yet get COVID-19 vaccines, we asked their willingness to take the vaccine, if it will be available for them. As indicated in figure 10, 43.3% were willing to take the vaccine; 46.8% didn't want to take and 9.9% were not sure for the moment. The findings imply that about 57% of the unvaccinated HCWs or those who didn't complete recommended doses of COVID-19 vaccines were hesitant.

Figure 10: HCWs' willingness to get COVID-19 vaccines (N=171)



Willingness to get COVID-19 vaccines by basic demographics

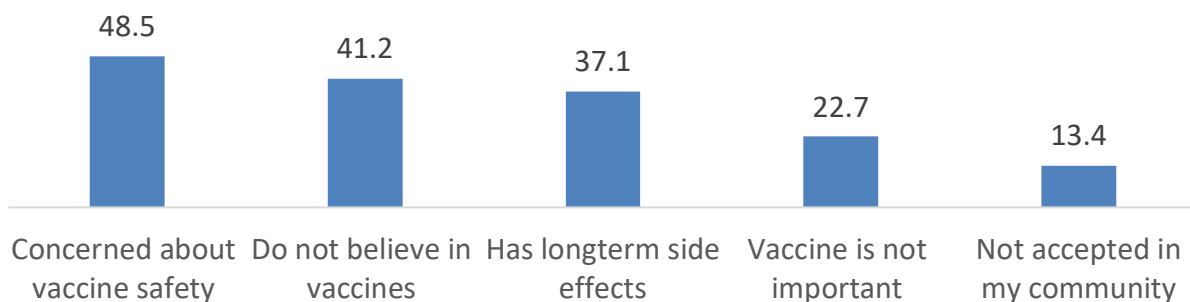
Percent of HCWs willingness to get COVID-19 vaccines varies by sex, age, education and place of work of HCWs. HCWs aged above 30 years were more willing to take the vaccines than those aged lower than 30 years (45% versus 42%). Male HCWs were more willing than female HCWs (45% versus 36%). However, willingness to receive COVID-19 vaccines has shown inverse association with education of HCWs. HCWs who had diploma level education were more willing than those who had degree or above (51% Versus 43%). The assessment also found the lowest willingness to receive COVID-19 vaccines to be in Addis Ababa (11%) and Bahir Dar (39%) than other clusters. Both uptake and willingness to take COVID-19 vaccines was the lowest in Bahir Dar cluster while compared to others.

Table 2: HCWs' willingness to get COVID-19 vaccines by basic demographics (N=171)

Demographics	Category	%
Age	20-29	41.7
	>=30 years	45.3
Education	Diploma	51.1
	Degree	40.3
	MSc or above	43.3
Gender	Female	35.6
	Male	54.3
City/Cluster	Bahir Dar	38.7
	Jimma	61.8
	Assossa	60
	Hawasa	47.8
	Addis Ababa	11.1

For those HCWs who were hesitant for COVID-19 vaccines, we asked their reason for hesitancy. Nearly half (49%) reported their concern about vaccine safety, while about 41%, 37%, 23% and 13% did not believe in COVID-19 vaccines, had a fear of side effects, did not have confidence on its efficacy and vaccines were not accepted in their community, respectively.

Figure 11: Reasons for COVID-19 vaccines hesitancy among HCWs (N=97)



Rumors and misinformation on COVID-19

Respondents were asked about the common rumors or mis/dis information about the COVID-19 virus, disease, and vaccines in their locality.

Common rumors about COVID-19 virus/diseases

- In many of the study clusters, COVID-19 is believed to be related to 666 evil spirits, it is bad spirit, and God's punishment that cannot be treated with modern medication.
- Some said COVID-19 is man-made that aimed to reduce population size.
- It is not real; there is no COVID-19 at all; it is to shift political agenda.
- It doesn't affect Ethiopian, it is just like a common cold.

Common rumors about COVID-19 vaccines

- Most of the interviewed HCWs talked about rumors regarding severe side effects that might be caused by COVID-19 vaccines:
 - infertility,
 - blood clot,
 - organ failure (kidney, heart, & liver),
 - sexual dysfunction,
 - menopause,
 - abortion
- COVID-19 vaccine is a virus that can causes more complication than the disease itself.
- Some said that COVID-19 vaccine has microchips to track and monitor people.
- Most HCWs reported that COVID-19 vaccines have 666 devil spirit.

Predictors for COVID-19 vaccine uptake

Binary logistic regression analysis was conducted, taking vaccine uptake as dependent variable and potential predictors such as exposure to messages about COVID-19, perceived risk of getting COVID19, perception of HCWs about COVID-19 vaccines, and having chronic illness as independent variables, controlling for the effect of socio-demographic variables such as age, sex and education. The results indicate that respondents with exposure to three or more media sources about COVID-19 vaccines were 1.7 times more likely [Adjusted Odds Ratio-AOR=1.7, 95%, Confidence Interval-CI: 1.1-2.7]; respondents who had no fear of side effects from COVID-19 vaccines were 1.8 time more likely [AOR= 1.8, 95% CI: 1.2-2.8]; and HCWs older than 30 years of age were 1.5 times more likely [AOR= 1.5, 95% CI: 1.04-2.3] to uptake COVID-19 vaccines than their counterparts.

Predictors for willingness to uptake COVID-19 vaccines

Binary logistic regression analysis was conducted, with willingness for vaccine uptake as a dependent variable and potential predictors such as exposure to COVID-19 messages, perceived risk of getting COVID-19, perception of HCWs about COVID-19 vaccines, having chronic illness, perceived side effects, as independent variables. The analysis controlled for the effect of socio-demographic variables such as age, sex and education. Findings indicate that male HCWs had greater odds to be willing to take the vaccine [AOR] =2.10, 95% CI: 1.00-4.44] than female HCWs. Similarly, HCWs who had confidence in the safety of COVID-19 vaccines were 2.7 times more likely to be willing to take COVID-19 vaccines than those who didn't have confidence [AOR= 2.7, 95% CI: 1.2-5.9]. HCWs who had no misperception related to 666 bad spirits were 2.6 times more likely to be willing to take COVID-19 vaccines than those who held this misperception [AOR = 2.6, 95 CI: 1.13-5.8].

Study limitations

- Inadequate representation of the rural population: the study employed face-to-face interviews of healthcare workers nearby to major towns. Thus, the findings may not be fully representative of all-healthcare workers in Ethiopia including rural areas.
- Inadequate sample size to compute regional level estimates: the sample size 500 was equally distributed to each five clusters. Thus, the sample size (100 per region) is not sufficient to conduct regional level multi variate analysis.

Discussion

CCP conducted a literature review on COVID-19 vaccine hesitancy in collaboration with the National Communication Technical Working Group before the commencement of this assessment. The review covered 25 relevant articles in which the pooled estimate of willingness to accept COVID-19 vaccines was 58%, which is higher than the estimate found out in this assessment (43.3%). This may be due to the increase in the number of HCWs who received COVID-19 vaccines over time. High coverage of COVID-19 vaccines created access to HCWs to receive the vaccine and to those HCWs who are willing are likely to get the vaccine. The remaining HCWs are mainly those who are hesitant.

The findings indicate that key determinants for COVID -19 vaccine acceptance are age, gender, perceptions on safety, fear of side effects, and relating COVID -19 vaccines with 666 are consistent with the findings in the literature review.

CONCLUSIONS

- Almost all interviewed HCWs were exposed to messages about COVID-19 vaccines from different sources even though the frequency of exposure varied.
- Radio/TV and social media are main sources of information about COVID-19 vaccines for healthcare workers.
- The majority of healthcare workers in hospitals and health centers completed the recommended doses of COVID-19 Vaccines. Of the total unvaccinated, about 57% of HCWs were hesitant to take COVID-19 vaccine.
- Lower willingness to take COVID-19 vaccines in Addis Ababa and Bahir Dar cluster.
- Nearly a third of healthcare workers were trained on COVID-19 vaccines.
- There is high misperception on COVID-19 vaccines among HCWs regarding long-term side effects, efficacy, and causes.
- Factors that positively predict willingness to receive vaccines are being male, having confidence in vaccine safety, and no misperception related to 666.
- Old age, low fear of long-term side effects and exposure to three plus media sources had significant association with HCWs uptake of COVID-19 vaccines.

RECOMMENDATIONS

- Explore reasons why lower willingness to receive COVID-19 vaccines was found in Addis Ababa and Bahir Dar clusters. Lower willingness or high hesitancy was found in the two clusters. Specially, in the Bahir Dar cluster, HCWs' uptake of COVID-19 vaccines was also found low. Thus, exploring the reasons for low uptake in these areas may inform future directions for the vaccine promotion program.
- Social and behavior change interventions should address misperceptions related to 666, side effects and safety.
- Radio/TV and social media are the main sources of information on COVID-19 vaccines for HCWs. Using mix of channels (radio/TV and social media) to promote messages on COVID-19 vaccines for HCWs may be effective.
- Only a third of HCWs took trainings or workshops on COVI-19 vaccines. Training of more healthcare workers may reduce the misperceptions on COVID-19 vaccines.
- Facilitate dialogues and consultative workshops among HCWs. As the majority of HCWs has already completed recommended doses of COVID-19 vaccines, facilitating dialogues in the health facility among HCWs may be good strategy to address the misperceptions on COVID-19 vaccines.