

Research Article

Cross-Sectional Study Assessing the Knowledge, Attitudes, and Practices of the Community towards Ebola Virus Disease in an Urban Setting in Western Uganda

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Abstract

Background: Epidemics are devastating as they cause mortality, and morbidity and are associated with a lot of stigma. Uganda experienced an outbreak of Ebola Virus Disease (EVD) for 4 months from September 2022 to January 2023. Ebola Virus, from the filoviridae family, is a highly contagious viral hemorrhagic infection with a mortality rate of up to 90%. Of 164 cases, 18 were health workers, of whom 7 died. Health professions students formed a part of these health workers, and are frontline providers in managing epidemics through community interventions such as prevention, preparedness, and emergency response. They are often involved in initial clinical care, and are also custodians of knowledge, availing a large workforce that can be leveraged amongst their non-medical communities. This project targeted prevention, preparedness, and response to the current and future EVD epidemics within Mbarara through capacity building and information sharing led by health professional students.

Methods: A descriptive cross-sectional study design was used. Needs assessment tools including questionnaires and checklists were developed using WHO information on EBV and past COVID-19 recommendations. This needs assessment involved four main phases including training, mapping, KIs/FGDs/questionnaires, and finally IEC distribution. Data collection was done by 21 undergraduate and postgraduate (Emergency medicine) students who had been trained on the current approach to EVD to enable evidence-based communication among the potential participants. Using researcher-administered hard copy and self-administered electronic questionnaires, we evaluated the knowledge, attitudes, and perceptions on EBV, among 220 participants including health professions students, health care providers, and the mapped communities. After establishing the baseline, Information, Education, and Communication (IEC) materials on EVD were put up in health centers, markets, worship centers, and institutional premises parallel with sensitization of community members on the information on the flyers in the local language.

Results: Males and females equally participated in the survey and the majority of the respondents (94.7%) had heard about EBVD. More market vendors and traders were aware of EBV with the most common sources of information being radio stations (75.3%) followed by television (65.3%). Participants believed that Ebola could be prevented by wearing face masks, these were sensitized about Ebola not being an airborne illness like COVID-19, however, face masks are important to prevent the spread of COVID-19 amidst EBV (to prevent coinfection). There were significant gaps in baseline knowledge of signs and symptoms of Ebola among different categories, highlighted among community leaders. In addition, many did not know the standard personal protective equipment needed before handling a person suspected to be infected with Ebola.

Conclusion: There is a need to educate the community, healthcare workers, and health Professional students about the Ebola virus disease and other epidemic diseases as a way of ensuring preparedness for this health workforce to combat them in the future. There is a need for more studies to be done to find out the role these various population sects can play in epidemic response.

BACKGROUND

Epidemics are devastating as they cause mortality and morbidity and are associated with a lot of stigma. Uganda experienced an outbreak of Ebola Virus Disease (EVD) declared by MOH Uganda on 20th September 2022 and ending on 11 January 2023. [1]. Ebola Virus, a member of the filoviridae family,

is a highly contagious viral hemorrhagic infection with a high mortality rate of up to 90% [2].

According to the World Health Organization (WHO), it was the country's first Sudan Ebolavirus outbreak in a decade and its fifth of this kind of Ebola. In total during this outbreak, there were 164 cases (142 confirmed and 22 probable), 55 confirmed deaths

and 87 recovered patients. (Case fatality rate: 39%; including probable deaths: 54%). Among these, at least 18 healthcare workers were infected, of whom 7 died. As with previous pandemics, health professions students have the capacity to support the response to health catastrophes like this epidemic [3]. These students are involved in patient care, are custodians of knowledge in their communities and avail a large workforce that can be leveraged.

Health professions students are surrounded by a community of non-health professionals, academic and support staff, as well as civilians in common gathering places like churches and markets. These places are high-risk sites for EVD transmission since it is contagious [4]. The civilians also potentially have inadequate knowledge of EVD recognition and prevention and the reporting mechanisms on suspects [5]. If not tackled, these gaps hinder the MOH efforts in curbing the epidemic and subsequently lead to EVD infections within the region and more deaths in the country, including health professionals further weakening the already strained health system. Students are custodians of health information, drivers of knowledge, and modifiers of the perception and attitude to different health interventions in the community [6]. They include undergraduates and postgraduates pursuing healthcare-related courses in medicine, nursing, pharmacy, and laboratory services at tertiary institutions. These students form part of frontline providers in managing the epidemic through community interventions such as prevention, preparedness, and emergency response [7].

The resurgence of EVD and continuously registered cases beyond Mubende called for greater emphasis on the empowerment of the community, health professions students, and health workers. This project was therefore directed towards prevention, preparedness, and response to the current and future EVD epidemics within Mbarara through capacity building and information sharing.

As part of the community engagement IEC materials approved by the Ministry of Health Uganda were distributed and community outreaches to carry out baseline surveys.

METHODOLOGY

A group of 21 undergraduate and postgraduate (Emergency medicine) students had a refresher on EVD to enable evidence-based communication among the potential participants they approached.

We assessed the knowledge, attitudes, and perceptions of health professions students, health care providers, and communities. In the communities, we mapped areas of perceived risk through community leadership such as DHO Mbarara City, and institutional leaders through a physical meeting held at the DHO office. Part of the team met the Dean Faculty of Medicine online who represented must Faculty of Medicine as well as the director of MRRH. We met community leaders before approaching any member in the mapped areas. We reached out to these mapped areas and carried out baseline surveys using printed questionnaires.

After establishing the baseline, we pinned up Information, Education, and Communication (IEC) materials on EVD in hospitals, markets, worship centers, and institutional premises parallel with sensitization of community members on the information on the flyers in the local language.

KEY STAKEHOLDERS

In an African society, community entry and exit is key as it enables the researcher to leave behind more sustainable solutions from the desirable goals set out by the team.

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7. Ms. Christine Mukiza, ICT Department, Faculty of Medicine, MUST
8. Local Council 1 chairpersons
9. Market chairpersons
10. Student Guild, Mbarara University and MUBS
11. The HEPSE team
12. The Religious leaders (Catholic, Anglican, Moslem and Pentecostal)
13. The market leaders (Kola nolya, Rwebikona, and Central market Mbarara)
14. The various Bodaboda stage leaders in Mbarara
15. The Global Buses franchise leadership
16. The Mbarara Bus and Taxi Park leaders

STUDENTS

The team consisted of 21 students who were distributed daily according to the mapped areas focusing on 5 major area categorizations. In each area, the focus was on places of convergence such as markets, religious places, and bus and taxi parks. There was a focus on bodaboda riders as they were found to be critical in spreading information in the community. The students were sent in teams of 3 to each area. Each team had someone in charge of data collection and transcription.

Our study tool was informed by information shared by the

World Health Organization. Course on Ebola Virus Disease as well as tools adapted from studies done during the COVID-19 pandemic. It focused on describing knowledge, attitudes, and perceptions of EBV as well as identifying gaps in epidemic response. This needs assessment involved four main phases based on the objectives.

Phase 1: Researcher Training

Phase one involved the health professions students having a refresher course on Ebola Virus Disease to enable evidence-based communication with the potential participants they approach. The refresher course was tailored to the information from the World Health Organization course on Ebola Virus Disease. They were trained in how to use Information, Education, and Communication materials to engage with the community. They were also trained on how to ethically collect data from the community on their knowledge, attitudes, and practices towards Ebola.

Phase 2: Mapping

Phase two consisted of reviewing suspect charts or registers at MRRH and health centers in Mbarara Health region for information on the socio-demographics, health characteristics, and common disease hotspots especially for past epidemics. It also involved engaging the District Health Office to map potential disease hot spot areas as well as convergence points in the community. Other sources of this information included community organizations working with the District Health Office and the Ministry of Health, which were identified by the DHO.

Phase 3: FGDs, KIs, Electronic Data Collection

Key leaders in the different community places were interviewed about their knowledge, attitudes and perceptions during the Ebola Virus Disease epidemic as well as community response in case of a suspected case. Data was collected using an electronic form and we had a minimum of 2 abstractors. Who consulted the key abstractor (the principal investigator) in case of any conflicts. The perspectives of the community, providers, and students were obtained through Focus Group Discussions (FGDs) and In-Depth Interviews (IDIs) to better identify and discuss their knowledge, attitudes, and perceptions. We chose to use two different data collection methods to improve the accuracy of data collected, minimize biases arising from weaknesses associated with particular single methods, provide a comprehensive picture of our topic of interest and allow triangulation of findings [8]. Focus group discussions consisted of 5-8 study participants in Mbarara. Each FGD had one moderator or facilitator, a timekeeper, and a field notes taker/observer who would take observational notes during the discussions and summary notes after each focus group discussion.

Each FGD lasted approximately 20-30 minutes which is within the range of time focus group interviews have been shown to usually last for about 1-2 hours, based on the complexity of the topics under investigation, number of questions, and participants

[9]. IDIs took on average 10-20 minutes depending on the topic, interviewer, and interviewee, which duration is within the range of average time for healthcare interviews [10]. In one-to-one interviews, the interviewer endeavored to make summary notes of each interview through memorization. We also had a note-taker for recording the interview outcomes. Interview schedules for both the FGDs and IDIs contained questions that explored community knowledge, attitudes, and perceptions. These questions invited participants to share their experiences.

Phase 4: IEC Distribution

We used information, education, and communication material in the form of posters and flyers highlighting the cause of EBV, how it is contracted, symptoms, case definition, and what to do if suspected if met with a suspect or contact. These were posted and distributed in designated areas in the community, at MRRH, and in health facilities within Mbarara after seeking permission from relevant authorities. We had a stratified study sample with separate groups of community sets such as market vendors, motorcyclists, health workers, and traders representing the community in Mbarara.

Study Variables

Independent variables: Demographic details include sex, age, academic qualification, highest level of education, and sources of information on EVD.

Dependent variables: Knowledge, attitude, and practices toward Ebola.

Knowledge was assessed using an 11-item questionnaire adapted from Zhong, et al. and modified to suit respondents, with each correct answer weighing one point. The questions were about clinical presentations, transmission, prevention, and control of Ebola. Each correct response weighs 1 point and 0 for incorrect responses. The higher the points, the more knowledgeable the respondent is.

Attitudes were assessed using 5 Likert-item questions that have been adopted from Goni, et al. and modified appropriately for Ebola by the authors. The responses were; strongly disagree, disagree, neutral, agree, and strongly agree each weighing 1-5 respectively for each positive statement. Some questions were reversed to eliminate biases of giving a single similar response in all the items.

Practices were assessed using five Likert-item questions that have been developed from the WHO and Ministry of Health Uganda recommended practices for the prevention of Ebola transmission. The responses were; always, occasional, and never each weighing 3,2, and 1 point respectively for a good practice.

Findings and Discussions

We visited 5 major areas in Mbarara city and educated more than 1000 people on the mode of spread, signs and symptoms, and prevention of Ebola virus disease (EBVD). We also interviewed

380 persons in the community to establish baseline knowledge about EBVD. All interviewed people provided verbal consent.

These people interviewed reflected the areas we visited and included: Market vendors, bodaboda riders, cobblers, waitresses, shopkeepers, charcoal sellers, Religious leaders, salonists, butcher men, community nurses, and drug sellers among others. The interviews focused on community leaders and ensured that various categories of the population were reached to have a clear picture of the knowledge, attitudes, and perceptions among the community population sects. There were slightly more males, 50.3% (191/380), and the majority of the respondents, 94.7% (360/380) had heard about EBVD. However, there was considerable heterogeneity in the baseline knowledge with some interviewed persons having no knowledge about EBVD. Even among those who had previously heard about EBVD, there were considerable myths and misinformation.

The females in the community had heard more about EBVD (51.6%) than males. Amongst both males and females, the market vendors and traders had heard more about EBVD. [Figure 1] details the different community population sects, their gender, and if they had heard about Ebola [Table 1]. Among the respondents, 0.3% had never heard about Ebola virus disease while 0.3% didn't know if they had ever heard about Ebola.

Among the respondents who had ever heard about the Ebola virus disease, the most common source of information as reported by the respondents was radio stations (75.3%) followed by television (65.3%). Other sources of information included social media, friends, and family. Frequencies of other sources of EBVD information are shown in [Figure 2].

The most commonly reported mode of spread of EBVD was touching an infected person (reported by 85% of respondents). Unexplained bleeding was the most commonly reported symptom of EBVD (80.3%). In contrast, the early symptoms such as fever, headache, and muscle pain were less commonly reported (61.6%, 46.8%, and 26.6% respectively) as shown in [Table 2] below.

Table 1: Have you heard about Ebola.

Occupation	Have you heard about Ebola?						Grand Total
	No			Yes			
	Female	Male	Total	Female	Male	Total	
Trader		2	2	22	19	41	43
Banker				2	1	3	3
Bodaboda rider		2	2		35	35	37
Chairman LC1				1	5	6	6
Cobbler					1	1	1
Customer					1	1	1
Grocery				7	3	10	10
Health worker	1		1	17	12	29	30
Market vendor	2	4	6	52	23	75	81
Police officer				1	4	5	5
Religious leader				5	2	7	7
Restaurant				8	5	13	13
Saloonist	1		1	3	2	5	6
Student				6	9	15	15
Supermarket				2		2	2
Tailor				6	2	8	8
Grand Total	4	8	12	132	124	256	268

Table 2: Response in the case of an EBVD Suspect.

Occupation	Community response in case of an EBVD suspect						Grand Total
	No			Yes			
	Female	Male	Total	Female	Male	Total	
Trader	3	2	5	11	8	19	24
Banker				2	1	3	3
Bodaboda rider		6	6		20	20	26
Chairman LC1				1	3	4	4
Grocery				6	1	7	7
Health worker				14	11	25	25
Market vendor	6	1	7	15	7	22	29
Police officer				1	3	4	4
Religious leader				4	2	6	6
Restaurant	1	1	2	3	1	4	6
Saloonist				2		2	2
Student		1	1	5	6	11	12
Supermarket				2		2	2
Tailor	3		3	3	1	4	7
Grand Total	13	11	24	69	64	133	157

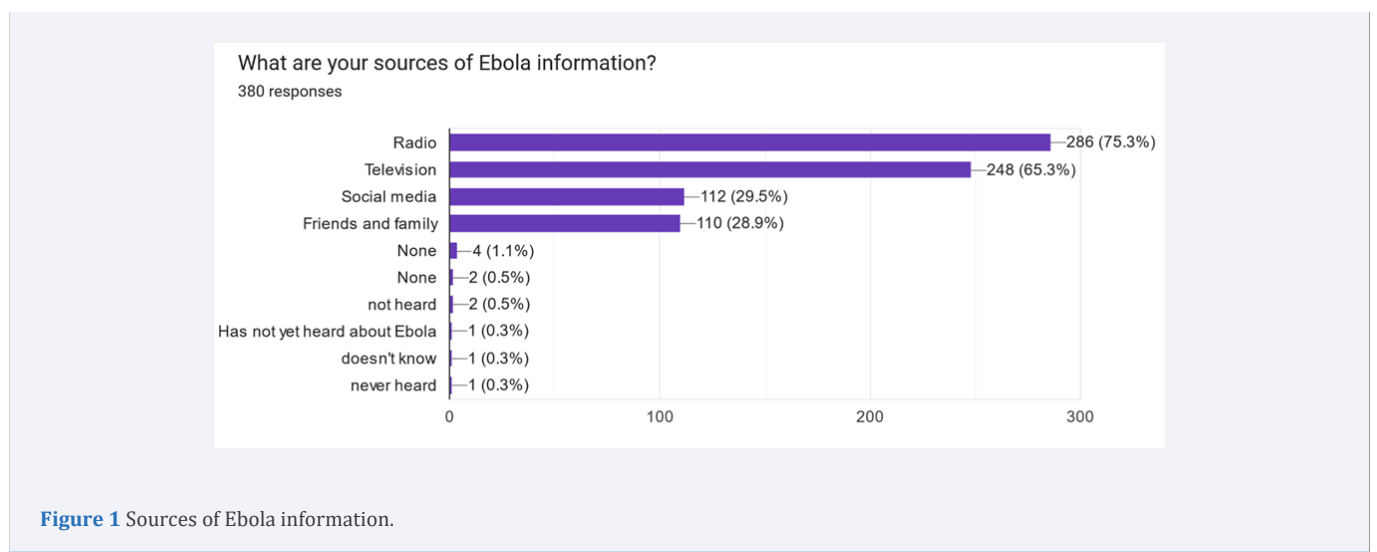


Figure 1 Sources of Ebola information.

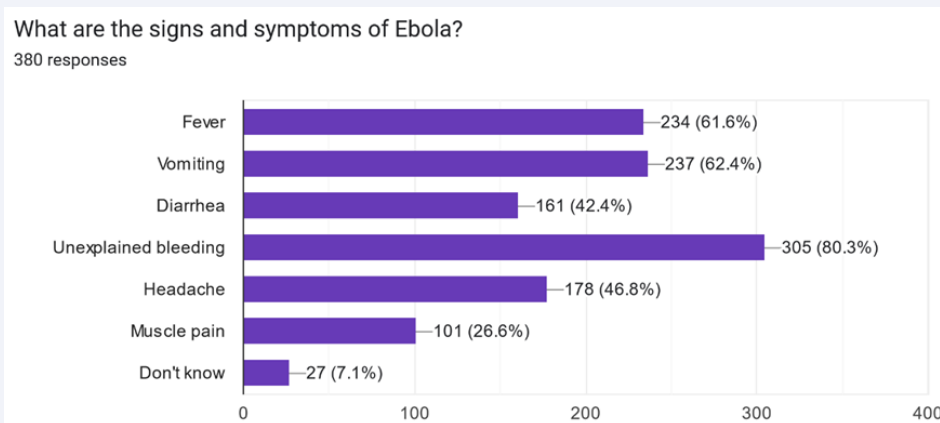


Figure 2 Signs and symptoms of Ebola.

84.7% of the population knew at least 2 symptoms with only 23.7% knowing more than 2 symptoms. Only 194/380 (51%) knew to call in case they suspected a person to have EBVD. 20% knew who to call and what number to call, Most people would call the police first in cases of a suspected EBVD case. Other information including knowledge of the modes of EBVD spread and methods of prevention was also collected.

We found that some people held a belief that Ebola could be prevented by wearing face masks. We educated them that Ebola is not an airborne illness like Covid-19. However, we asserted that wearing face masks is important to prevent the spread of COVID-19. People in the community were receptive to the education and many requested similar education about other epidemic diseases such as cholera, COVID-19, and others. In addition, community members appreciated the smartness of the medical students and their safety precautions through wearing masks and having hand sanitizers.

We found myths that EBVD could be spread through insects, especially grasshoppers. We reassured the community that this wasn't evidence-based. There were also circulating stories of a family of 7 people who contracted EBVD after exhuming their dead EBVD victim to re-bury them according to traditional rituals. This story was cited by many people as the reason they started taking EBVD seriously. It also reasserted the Ministry of Health guidelines to bury EBVD victims by trained burial teams. We observed a challenge of inadequate hand-washing stations in many of the places we visited, especially marketplaces. Many of them lacked hand-washing stations at entry and exit points, despite the Ministry of Health emphasizing hand-washing as a preventive strategy to prevent the spread of EBVD.

Surprisingly, we found that some community health workers interviewed lacked knowledge of the presenting signs and symptoms of EBVD. In addition, many did not know the standard personal protective equipment needed before handling a person

suspected to be infected with Ebola. In some health settings, the key personnel in charge were reluctant; An intern scared of handling an EBVD suspect (Patient was bleeding from the eyes) consulted with the Infectious disease expert who just glanced once and said, "That cannot be EBVD" and walked away. They advised that CMEs be organized to educate them about EBVD.

Amongst the 228 healthcare workers and health profession students who filled out the online tool, the respondents reflected different specialties and cadres in the healthcare profession: Nurses, Medical Officers, Pharmacists, Clinical Officers, Family Physicians, Public Health Specialists, Social workers, Pediatricians, Emergency Medicine Physicians, Rehabilitation specialists, Physiotherapists, Entomologists, Laboratory Technicians, Midwives, Interns and Various health professional Students among others. The survey focused on ensuring that various categories of the population are reached to have a clear picture of the knowledge, attitudes, and perceptions.

There were slightly more males 62.7% (143/228) and the majority of the respondents, 99.1% (226/228) had heard about EBVD with the commonest source of information from the online tool respondents being social media (86%) followed by television (68.4%). Frequencies of other sources of EBVD information are shown in [Figure 3] below. Concerning how to approach an EBVD suspect, 59.2% of the respondents were sure of what to do, 21.1% didn't know and 19.7% were not sure. 63.6% of the respondents knew how to appropriately use Personal Protective Equipment in an EBVD suspect environment but only 33.3% had access to the appropriate Personal Protective Equipment as seen in [Figure 4] below. Only 29.4% of the respondents were not afraid of EBVD as shown in [Figure 5,6].

There were significant gaps in baseline knowledge about Ebola among different categories of people interviewed. This can probably be explained by different levels of formal education and accessibility to information. However, a small proportion of the population didn't have any knowledge about the disease,

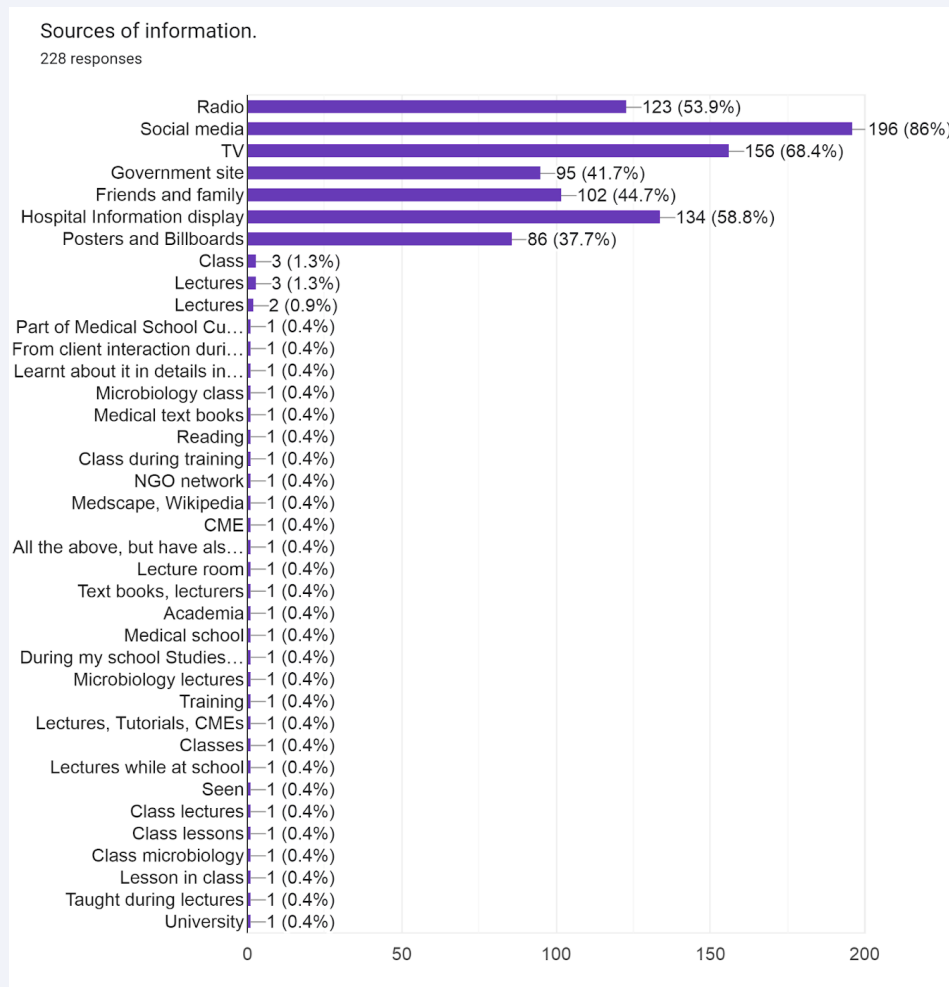


Figure 3 Sources of Ebola information from online respondents.

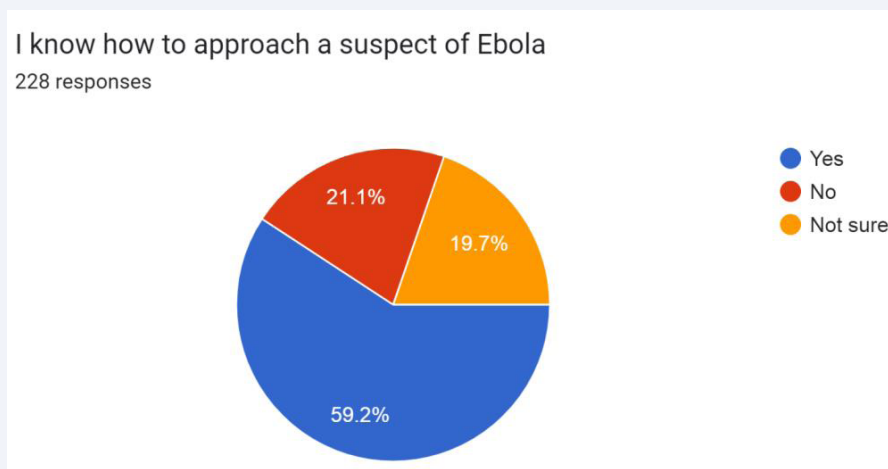


Figure 4 How to approach an Ebola suspect.

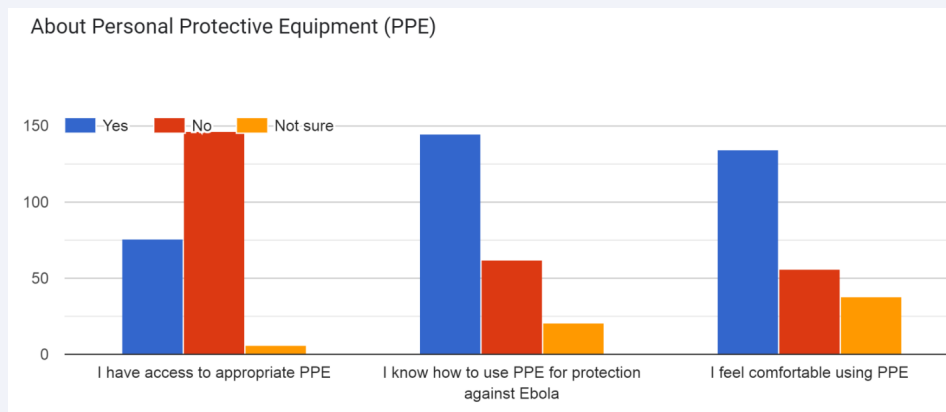


Figure 5 Knowledge of PPE use.

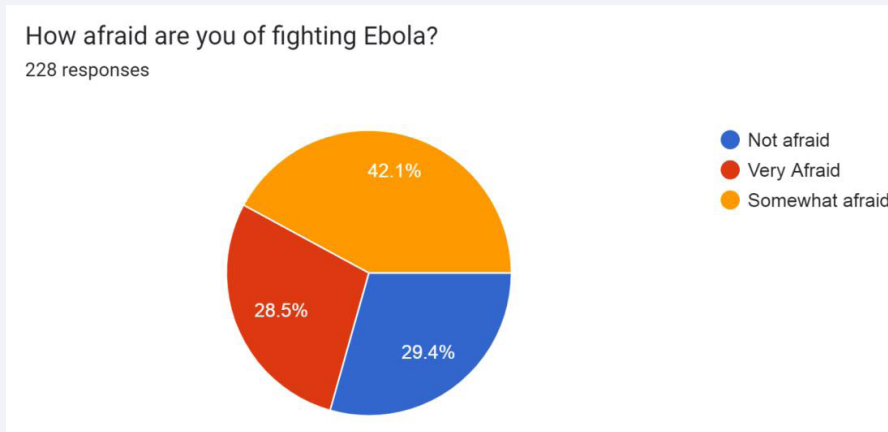


Figure 6 How to approach an Ebola suspect.

underscoring the need to disseminate such information to the lowest community level. Notably, a significant number of people considered information about the spread, presentation, and prevention of COVID-19 to be the same as that for Ebola. The influence of workplaces on awareness is yet to be determined. Myths and misconceptions are probably derived from already existing information about previous pandemics like COVID-19, personal beliefs, and misinterpretation of information picked from the media about Ebola.

The most common source of information reported by the community participants was radio followed by television which emphasizes the need for awareness campaigns to mainly focus on the aforementioned platforms. In particular, social media informed a smaller number of people than normally expected. It's probably used more by people of higher education backgrounds and socio-economic status. Most importantly, a significantly small proportion of the participants reported getting information from friends and family, highlighting the need to encourage the

population to actively take part in sharing credible information about Ebola.

Furthermore, the majority of the respondents knew about a touch of body fluids of an infected person as a mode of spread. However, other modes of spread were less reported. This could probably be caused by gaps in information being shared through media platforms. Every aspect of daily life that can contribute to the spread of Ebola must be emphasized while broadcasting such information. Surprisingly, a section of health workers lacked some information about the presentation and PPE used in Ebola prevention which highlighted the need for immediate training of this particular group in the face of the pandemic given they are the frontline team that handles suspected and confirmed cases.

STUDY LIMITATIONS

Our study has several limitations. It did not categorize the population sections and sample them accordingly which could

have one population section participate more than another. Consequently, we may not have captured the full range of perspectives and opinions within the faculty regarding mentoring.

CONCLUSION

Epidemics are devastating and associated with a lot of morbidity and mortality. Functional Health systems with proper surveillance, epidemic readiness, response, and readiness are a necessity to combat epidemics. Health professions students provide a necessary large workforce that can be utilized in epidemic response.

RECOMMENDATIONS

Important Next Steps Include

To Researchers: Future studies should explore the capacity of health workers to handle various epidemics as well as the avenues for multispectral collaboration in epidemic response

To Medical institutions: Efforts to equip health professions students with knowledge on epidemic surveillance, preparedness, and response

DECLARATION

Ethical Approval and Consent to Participate

The study was performed as operational/, Research with permission to collect data from participants being granted by the dean of students at MUST. All participants voluntarily gave informed consent to be enrolled in the study enrolment.

Availability of Data and Materials

All data generated or analyzed during this study are included in this published article [and its supplementary information files.

Author Contributions

TE & PMK developed the idea of the Programme. TE, JM,

SN, and MP designed and administered the monitoring and evaluation tools. TE & SN analyzed the data and wrote the first manuscript draft. SN, JM, PM, AN, and PMK reviewed and edited. All authors read and approved the final manuscript.

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