



Original articles

Public awareness, health seeking practices and constraints to uptake of COVID-19 testing in the conflict-affected Anglophone regions of Cameroon

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Background

The number of COVID-19 cases around the world are on the rise, yet testing rates in Cameroon are still low especially in conflict-affected areas. We investigated the awareness, health seeking practices and barriers to COVID-19 testing in the conflict-affected communities of the North West and South West Regions of Cameroon, in order to contribute to the development of policies aiming at reduction of the disease burden.

Methods

A cross-sectional survey was conducted from October to November 2020, with residents in the North West and South West Regions. A questionnaire was administered to determine public awareness and identify aspects that may influence uptake of COVID-19 testing in conflict settings.

Results

Of the 872 respondents, 53.7% were females, 67.2% lived in an urban setting and 30.3% were internally displaced. 72.9% respondents had heard of COVID-19, with social media being the main channel of information. 95.2% respondents had presented with COVID-19 symptom with only 36/880 who did the test. 22.2% of respondents self-medicated and 45.6% never took any medication. Kidnappings, gunshots and distance travelled accounted for some reasons some respondents had never tested for COVID-19.

Conclusion

COVID-19 prevention efforts should make use of social media in circulating correct information to residents of the North West and South West Regions. Information on the various testing sites should be widely disseminated using various channels especially social media, community health workers, and religious leaders. Community-based testing of COVID-19 using rapid diagnostic tests is recommended.

INTRODUCTION

Globally, many countries are experiencing a second or third wave of the COVID-19 pandemic, which is hitting harder than previous waves.¹ Most countries are scaling up testing capacity for both symptomatic and asymptomatic persons. Yet relatively low infections are being reported in many African countries like Cameroon in part,² due to low COVID-19 testing rates.³ Cameroon is one of the most affected countries in Africa from the COVID-19 pandemic with 30,740 cases and 474 deaths as of the 31st January 2021.⁴ In fact, from the 1st to 31st January 2021 alone, 3,340 new cases were recorded, raising the case-fatality rate to 1.6%, the highest recorded since the confirmation of the

first COVID-19 case in Cameroon.⁴ Testing rates and records at the start of the pandemic were relatively high in the first few months after the first case was confirmed on the 6th of March 2020.⁵ Sadly, testing rates plummeted for several months although the number of testing sites for COVID-19 had been increased with the introduction of the COVID-19 rapid test kits at district levels.² It is uncertain what the true cause of this decline in testing rate was, despite efforts by the Ministry of Public Health to decentralise testing at primary care level. There were possibly asymptomatic people with SARS-CoV-2 who may pass undetected and symptomatic patients self-medicating at home with no records within the health information system (HIS) to enable adequate policy development and implementation.^{2,6}

The on-going conflict in the two Anglophone regions in

Cameroon (North West and South West Regions) further sets in challenge to COVID-19 testing in districts as 37% health facilities are reported to have been closed or partly functional. Since 2016, the South West and North West Regions of Cameroon have been experiencing armed conflict which has led to over 800,000 persons internally displaced.^{7,8} Provision of public health services in these regions are challenging owing to the high insecurity rates observed in these conflict-affected regions with some health facilities even burnt down by the warring factions. Faced with a partly non-functional health system in these regions,⁸ especially within the era of a pandemic, there is need for strong reinforcement of COVID-19 infection prevention measures including COVID-19 testing at all levels,⁵ especially at community level where transmission is likely to happen the most. This is key in mitigating the impact of COVID-19 in fragile and conflict-affected settings, especially considering that vaccination against COVID-19 in conflict settings may not happen soon.⁹ Thus, raising the need to strengthen policy efforts in scaling up COVID-19 testing within communities. We sought to investigate the awareness, health seeking practices and barriers to COVID-19 testing in the conflict-affected communities of the North West and South West Regions of Cameroon.

METHODS

STUDY DESIGN AND STUDY AREA

A cross sectional survey was conducted in the North West and South West Regions of Cameroon. The study areas were selected because they are experiencing a protracted humanitarian crisis for the past four years with high insecurity causing over 800,000 persons to be internally displaced and a good number of non-functional health facilities.

STUDY POPULATION AND SAMPLE

The study population was made up of people residing in conflict-affected communities either as internally displaced persons or host populations. All study participants were above 18 years of age. The sample size was calculated based on the population size of 3,521,900 for the two regions,¹⁰ using a margin error of 5%, a confidence interval (CI) of 95%, and an expected response distribution of 50%.¹¹ The minimum sample size estimated for the study was 385. We enrolled a larger sample size of 872 participants in order to account for errors and non-respondents. In both regions, convenient sampling method was used to recruit survey participants due to security constraints.

QUESTIONNAIRE

A questionnaire was developed to determine public awareness and identify some aspects, which may influence the uptake of COVID-19 testing in conflict-affected areas of North West and South West Regions of Cameroon. The questionnaire was pre-tested in one community and observations from the pre-test were used to improve the questionnaire. The questionnaire was divided in three sections, with the first section collecting information on the socio-demographic characteristics of the respondents, the second

section collecting information on the knowledge and risk associated with COVID-19 and the third section on health seeking practices related to COVID-19.

DATA COLLECTION AND ANALYSIS

Data was collected by trained interviewers from October to November 2020 through face-to-face interviews. Close follow up with the field interviewers during data collection and review of completed questionnaires was done to ensure consistency and quality of data. Data entry was done under control using the double entry method. Data were analysed using Statistical Package for Social Science (SPSS) version 25.0 (SPSS, Inc., Chicago, IL, USA). Descriptive statistics were carried out to measure percentages, averages, and relative frequencies of the variables. Relationships between qualitative variables, such as public awareness, health seeking practices, uptake of testing and constraints to COVID-19 testing were assessed using the Pearson's Chi-Squared tests at 95% confidence interval. Statistical level of significance was set at $P < 0.05$.

RESULTS

SOCIO-DEMOGRAPHIC DATA

This study assessed the level of awareness, health seeking practices as well as constraints to uptake of COVID-19 testing in the conflict affected Anglophone regions of Cameroon. Of the 872 participants interviewed, a majority were resident in an urban setting (67.2%), were females (53.7%) and were within the age group of 30 to 39 years (50.9%) with a mean age of the participants of 29.8 years (Table 1). With regards to the number of occupants per household, 42% of the participants lived 4 to 6 persons in the same house with a mean household size of 4.9 members. About a third of the study participants were living as internally displaced persons and more than two third of the respondents were doing informal jobs for a living (33.7%) or students (34.2%). Most responders reported secondary level of education (54.6%) and were of the Catholic faith 38.8%.

PUBLIC AWARENESS TO COVID-19

The level of awareness of participants on COVID-19 was assessed in this study (Table 2). All but 26 of the 872 (97%) participants had heard of the disease, mostly through the social media (72.9%) with more than two-third (70.2%) aware it is a natural respiratory illness that originated from animals but only 14.7% knew or had met someone with the disease. Despite being aware of the disease, most of the participants gave wrong responses on the mode of transmission (83.7%), and signs and symptoms (76.6%) but were more knowledgeable on the methods of prevention (61.9%). With regards to their awareness of the different treatment options, only about a third (39.7%) of the participants knew COVID-19 could be treated (managed) but with less than 20% being able to state any treatment or management option including Ash Bishop Kleda's herbal tea, (2.1%), use of Chloroquine and Azithromycin (7.3%), assorted use of herbs and fruits (8.3%) and drinking/inhaling of warm water (1.8%). On whether a vaccine existed, only 14.9% of the

Table 1. Socio-demographic data

| Variable | | Frequency (n= 872) | Percent |
|---------------------------------|-----------------------|--------------------|---------|
| Area of Residence | Rural | 194 | 22.2 |
| | Urban | 586 | 67.2 |
| | City | 92 | 10.6 |
| Gender | Male | 404 | 46.3 |
| | Female | 468 | 53.7 |
| Age | <20 Years | 14 | 1.61 |
| | 20 – 29 Years | 96 | 11.2 |
| | 30 – 39 Years | 444 | 50.9 |
| | 40 – 49 Years | 200 | 22.9 |
| | 50 – 59 Years | 80 | 9.2 |
| | 60 – 69 Years | 32 | 3.7 |
| | ≥70 Years | 16 | 1.8 |
| | Age in years; mean±SD | 29.8±10.4 | |
| Number of persons per household | 1 – 3 | 296 | 33.9 |
| | 4 – 6 | 366 | 42.0 |
| | 7 – 9 | 152 | 17.4 |
| | ≥10 | 58 | 6.7 |
| | Mean±SD | 4.9±3.1 | |
| Resident as IDP | Yes | 264 | 30.3 |
| | No | 608 | 69.7 |
| Occupation | Farmer | 98 | 11.2 |
| | Health Personnel | 44 | 5.0 |
| | Informal Sector | 294 | 33.7 |
| | Public Service | 120 | 13.8 |
| | Security | 18 | 2.1 |
| | Student | 298 | 34.2 |
| Level of Education | Uneducated | 38 | 4.4 |
| | Primary | 94 | 10.8 |
| | Secondary | 476 | 54.6 |
| | Tertiary | 264 | 30.3 |
| Religion | Catholic | 338 | 38.8 |
| | Muslim | 16 | 1.8 |
| | Pentecostal | 214 | 24.5 |
| | Protestant | 280 | 32.1 |
| | Revival | 24 | 2.8 |

*IDP - internally displaced persons

participants were aware of the development of a vaccine against COVID-19 but none could correctly identify any vaccine.

HEALTH SEEKING PRACTICES RELATED TO COVID-19

The health seeking practices of participants in regards to and during COVID-19 pandemic were also assessed in this study. On the participant's first point of care during the pandemic, a majority still preferred government hospitals

(33%) of the different options while an interesting proportion (26.8) practised self-medication. On how the disease was treated for those who had been infected, only two had been to the different treatment centres set up by the government. We observed that an over whelming majority of the participants (87.4%) had never been tested for COVID-19 and therefore were unaware of their status. Unaware of their COVID-19 status, 95% of the participants however admitted having experience signs/symptoms related to the disease with 46% seeking no treatment at all as

Table 2. Public awareness to COVID-19

| Awareness factor | Responses | Frequency (n= 872) | Percent |
|----------------------------------------------------------|---------------------------------------------------------|--------------------|---------|
| Have you heard about the novel coronavirus (COVID-19)? | Yes | 846 | 97.0 |
| | No | 26 | 3.0 |
| If yes, how did you hear about COVID-19? | Mainstream | 174 | 20.0 |
| | Social Media | 636 | 72.9 |
| | Word of Mouth | 36 | 4.1 |
| | NA | 26 | 3.0 |
| To the best of your knowledge, the novel Coronavirus is: | Man-made biological weapon | 232 | 26.6 |
| | An exaggeration by news media/government to cause panic | 18 | 2.1 |
| | Plague caused by sin of man | 10 | 1.1 |
| | Natural respiratory illness originating from animals | 612 | 70.2 |
| Met or known anyone infected? | Yes | 128 | 14.7 |
| | No | 744 | 85.3 |
| How is Coronavirus transmitted? | Correct Responses | 142 | 16.3 |
| | Wrong Responses | 730 | 83.7 |
| Signs and symptoms of COVID-19 | Correct Response | 204 | 23.4 |
| | Wrong Response | 668 | 76.6 |
| How can you prevent Coronavirus? | Correct Responses | 540 | 61.9 |
| | Wrong Responses | 332 | 38.1 |
| Is there a treatment for COVID-19? | Yes | 346 | 39.7 |
| | No | 526 | 60.3 |
| If you know of any treatment, please specify | Bishop Kleda's | 18 | 2.1 |
| | Chloroquine, Azithromycin | 64 | 7.3 |
| | Herbs, Fruits | 72 | 8.3 |
| | Prayers | 4 | 0.5 |
| | Warm water | 16 | 1.8 |
| | Don't know | 698 | 80.0 |
| Is there a vaccine for COVID-19? | Yes | 130 | 14.9 |
| | No | 742 | 85.1 |
| If you know of a vaccine, please identify | Wrong Response | 872 | 100.0 |

*NA - not applicable

presented in [Table 3](#).

UPTAKE OF COVID-19 TESTING

The willingness to submit to a COVID-19 test was also evaluated in this study and responses from the 872 participants summarised in [Table 4](#). Interestingly, a majority of the participants (61.2%) said they would readily go for the test if they presented with symptoms, irrespective of the sample collected (49.3%), and either at a government (36%) or private (25.9%) testing centre. However, 42 of those who took the test did not go for their results either due to no face mask, lack of funds, no identification document or did not know the location of the testing centre.

CONSTRAINTS TO COVID-19 TESTING

Accessibility to COVID-19 testing sites as well as other difficulties encountered by participants to get tested were captured and presented in [Table 5](#). Of the many reasons advanced for not getting tested, a reasonable percentage of participants (14.6%) said they were scared of being quarantined, while others said they were scared of being injected with the virus (6.9%) and of gunshots (1.1%). Also, a majority either did not have any sample collection site in their area of residence (37.6) or did not know of it at all (29.8%), while 28% said they would need to travel long distances before getting to a testing site. A quarter (25%) of the study participants said they were prevented from testing by the ongoing armed conflict in the regions as they were scared of

Table 3. Health seeking practices related to COVID-19

| Health seeking practices | | Frequency (n= 872) | Percent |
|---------------------------------------------------------------------------------------------------------------------|------------------------|-----------------------|---------|
| When you or any member of your family feels sick, where do you usually seek health care (your first point of care)? | Churches | 14 | 1.6 |
| | Government Hospitals | 288 | 33.0 |
| | Not Specific | 144 | 16.5 |
| | Private Clinics | 176 | 20.2 |
| | Self-Medication | 234 | 26.8 |
| | Traditional Medication | 16 | 1.8 |
| Have you been infected or tested for the novel coronavirus? | Don't know | 62 | 7.1 |
| | No and not tested | 762 | 87.4 |
| | Suspected Positive | 12 | 1.4 |
| | Tested but Negative | 28 | 3.2 |
| | Tested Positive | 8 | 0.9 |
| If you been infected with COVID-19, how were you treated? | At home with drugs | 6 | 30.0 |
| | Treatment Centre | 2 | 10.0 |
| | Traditional Medication | 4 | 20.0 |
| | No treatment | 8 | 40.0 |
| | NA | 852 | 97.7 |
| Have you presented with any of the following symptoms in the past three months? | None | 42 | 4.8 |
| | Some observed | 830 | 95.2 |
| If you've presented any of these symptoms, how were treated? | In Church | 8 | 0.9 |
| | Government Hospital | 86 | 9.9 |
| | Private Clinics | 48 | 5.5 |
| | Self-Medication | 194 | 22.2 |
| | Traditional Medication | 34 | 3.9 |
| | No Treatment taken | 398 | 45.6 |
| | Not specific | 62 | 7.1 |
| | NA | 42 | 4.8 |
| Do you know anyone who presented with any of these symptoms in the past two months? | Yes | 854 | 97.9 |
| | No | 18 | 2.1 |
| If you know someone with any of the symptoms, how was he/she treated? | Church | 2 | 0.2 |
| | Government Hospital | 106 | 12.2 |
| | Private Clinics | 78 | 8.9 |
| | Self-Medication | 122 | 14.0 |
| | Traditional | 24 | 2.8 |
| | No Treatment | 36 | 4.1 |
| | Not Specific | 486 | 55.7 |
| | NA | 18 | 2.1 |

*NA - not applicable

gunshots, being kidnapped or the effects of “ghost towns”.

ASSOCIATION BETWEEN PARTICIPANTS' AREA OF RESIDENCE AND COVID-19 VARIABLES

This study took interest in the association between the participants' area of residence and some COVID-19 variables including whether the participant had ever been infected/

tested, if the participant will readily go for testing, knows / have testing sites and if the crisis was preventing their will to get tested (Table 6). We noted an over whelming majority of participants resident in rural areas (88.7) do not know or have a testing site and none had ever been confirmed positive for COVID-19 with a great statistically significant difference. On the other hand, we observed neither a striking difference nor an association on whether the participants

Table 4. Uptake of COVID-19 testing

| Uptake of COVID-19 testing | | Frequency (n= 872) | Percent |
|---------------------------------------------------------------------------------------------------------------|-------------------------------|-----------------------|---------|
| Would you readily go for a COVID-19 test? | Yes | 534 | 61.2 |
| | No | 338 | 38.8 |
| Does the sample collected or collection process for COVID-19 testing affect your decision to go for the test? | Yes | 118 | 13.5 |
| | No | 324 | 37.2 |
| | Don't Know | 430 | 49.3 |
| Where did you (or will you prefer to) go for a COVID-19 test? | Government Centres | 314 | 36.0 |
| | Private Centres | 226 | 25.9 |
| | At Home | 106 | 12.2 |
| | Don't want the test | 136 | 15.6 |
| | Not interested | 90 | 10.3 |
| If you have taken a COVID-19 test, did you go for the results? | Yes | 60 | 6.9 |
| | No | 42 | 4.8 |
| | NA | 770 | 88.3 |
| If you did not go for the results, why? | Don't know the testing Centre | 6 | 0.7 |
| | NA | 854 | 97.9 |
| | No face mask | 8 | 0.9 |
| | No Funds | 2 | 0.2 |
| | No ID | 2 | 0.2 |

*NA - not applicable; *ID - identity Card

will readily go for COVID-19 testing if they had symptoms, if they had or knew testing sites or if living in a conflict setting prevented them from getting tested.

ASSOCIATION BETWEEN COVID-19 AWARENESS AND DEMOGRAPHICS

The level of public awareness on COVID-19 was also evaluated in relation to some demographic parameters (sex, area of residence, level of education and occupation) (Table 7). We observed a great association between level of awareness and area of residence as relatively fewer persons in rural areas were aware, same with level of education as much fewer uneducated persons demonstrated awareness, likewise with occupation as students, farmers and other persons in the informal sector of work showed lesser awareness towards the COVID-19 pandemic.

ASSOCIATION BETWEEN COVID-19 AWARENESS AND OTHER VARIABLES

Table 8 also illustrates the participants' level of awareness to COVID-19 with respect to other variables. Our findings confirmed a statistically significant association between whether the participants will readily go for testing, knew / had testing sites and were prevented from testing by the conflict situation in relation to their level of awareness to COVID-19.

DISCUSSION

Since the outbreak of the Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) causing the Coronavirus disease 2019 (COVID-19),² key elements to adequately controlling the virus remains public awareness towards the mode of spread, signs/symptoms and method of prevention.¹² This study accessed the level of awareness of residents within the two conflict affected Anglophone regions of Cameroon and found that a great majority of the participants had heard of the disease, mostly through the social media, but could not correctly identify the modes of transmission, signs and symptoms or the methods of prevention. We previously reported higher results from the inhabitants of Bamenda city, Regional capital of the North West.¹³ The high level of awareness of the disease contrasted by lower levels of awareness on the mode of spread, signs/symptoms and method of prevention could be due to social media being the main source of information to the participants. Social media remains an untrusted source of information especially regarding the COVID-19 pandemic as there exist different theories on the origin, mode of containment and treatment of the virus on these platforms. This might have accounted for misinformation on COVID-19 and incorrect identification of the transmission and prevention methods (Table 2). This could be justified by the fact that, almost a third of the participants belief COVID-19 is either a man-made biological weapon, an exaggeration by news media or government to cause panic or a plague caused by sins of man (Table 2). Our findings cor-

Table 5. Constraints to COVID-19 testing

| Constraints to COVID-19 testing | | Frequency (n= 872) | Percent |
|-------------------------------------------------------------------------------------------|-------------------------------------------------|-----------------------|---------|
| Give reasons why you will (or not) go for a COVID-19 test | No Funds | 8 | 0.9 |
| | Not symptomatic | 250 | 28.7 |
| | Scared of being injected with the Virus | 60 | 6.9 |
| | Scared of being quarantined | 126 | 14.4 |
| | Scared of gunshots | 10 | 1.1 |
| | Scared of sampling procedure | 6 | 0.7 |
| | To know my status, get treated, stop the spread | 412 | 47.2 |
| Do you know any sample collection or testing site for COVID-19 in your area? | Yes | 284 | 32.6 |
| | No Site | 328 | 37.6 |
| | Don't Know | 260 | 29.8 |
| Would you need to travel a long distance before getting to an area where testing is done? | Yes | 244 | 28.0 |
| | No | 352 | 40.4 |
| | Don't Know | 276 | 31.7 |
| How much does it cost to do COVID-19 test in your area? | 16000 CFA (29 USD) | 4 | 0.5 |
| | Don't Know | 606 | 69.5 |
| | Free | 262 | 30.0 |
| Does the crisis in the anglophone regions prevent you from getting tested for COVID-19? | Yes | 218 | 25.0 |
| | No | 654 | 75.0 |
| If you are prevented from testing by the crisis, how? | Scared of Gunshots, Kidnapping, Ghost towns | 218 | 25.0 |
| | NA | 654 | 75.0 |

*CFA - Communauté financière d'Afrique; *NA - not applicable

Table 6. Association between participants' area of residence and COVID-19 variables

| COVID-19 Variables | | Area of Residence | | | P |
|----------------------------|---------------------|-------------------|------------|-----------|-------|
| | | Rural | Town | City | |
| Ever been infected/ Tested | Don't know | 10 (16.1) | 46 (74.2) | 6 (9.7) | 0.001 |
| | No and never tested | 172 (22.6) | 514 (67.5) | 76 (10.0) | |
| | Suspected Positive | 2 (16.7) | 10 (83.3) | 0 (0.0) | |
| | Tested but Negative | 10 (35.7) | 12 (42.9) | 6 (21.4) | |
| | Tested Positive | 0 (0.0) | 4 (50.0) | 4 (50.0) | |
| Readily go for testing | Yes | 126 (23.6) | 354 (66.3) | 54 (10.1) | 0.462 |
| | No | 68 (20.1) | 232 (68.6) | 38 (11.2) | |
| Know / have testing sites? | Yes | 56 (19.7) | 204 (71.8) | 24 (8.5) | 0.327 |
| | No Sites | 76 (23.2) | 212 (64.6) | 40 (12.2) | |
| | Don't Know | 62 (23.8) | 170 (65.4) | 28 (10.8) | |
| Conflict prevents testing | Yes | 60 (27.5) | 136 (62.4) | 22 (10.1) | 0.096 |
| | No | 134 (20.5) | 450 (68.8) | 70 (10.7) | |

roborate with Cinelli *et al.*,¹⁴ who recognised the power of social media in misinforming the public on COVID-19.

Also, despite numerous management/treatment options for the virus, 60% of the participants said it does not exist and with just 7% being able to identify the treatment option being used by the Cameroon government.¹⁵ Associating

participant's level of public awareness on COVID-19 with some demographic parameters (Table 7), showed a great association, indicating where one resides, level of education and occupation were significant determinants. This can be explained by the fact that the mainstream media (Cameroon Radio Television) which is the portal through

Table 7. Association between COVID-19 awareness and demographics

| Demographics | | COVID-19 Awareness | | P |
|--------------------|------------------|--------------------|---------------|-------|
| | | Aware (%) | Not Aware (%) | |
| Sex | Male | 176 (43.6) | 228 (56.4) | 0.076 |
| | Female | 232 (49.6) | 236 (50.4) | |
| Area of Residence | Rural | 62 (32.0) | 132 (68.0) | 0.001 |
| | Town | 312 (53.2) | 274 (46.8) | |
| | City | 34 (37.0) | 58 (63.0) | |
| Level of Education | Uneducated | 6 (15.8) | 32 (84.2) | 0.001 |
| | Primary | 44 (46.8) | 50 (53.2) | |
| | Secondary | 222 (46.6) | 254 (53.4) | |
| | Tertiary | 136 (51.5) | 128 (48.5) | |
| Occupation | Farmer | 40 (40.8) | 58 (59.2) | 0.001 |
| | Health Personnel | 34 (77.3) | 10 (22.7) | |
| | Informal Sector | 126 (42.9) | 168 (57.1) | |
| | Public Service | 70 (58.3) | 50 (47.7) | |
| | Security | 12 (66.7) | 6 (33.3) | |
| | Student | 126 (42.3) | 172 (57.7) | |

Table 8. Association between COVID-19 awareness and other variables

| COVID-19 variables | | COVID-19 Awareness | | P |
|----------------------------|---------------------|--------------------|---------------|-------|
| | | Aware (%) | Not Aware (%) | |
| Ever been infected/ Tested | Don't know | 28 (45.2) | 34 (54.8) | 0.117 |
| | No and never tested | 362 (47.5) | 400 (52.5) | |
| | Suspected Positive | 8 (66.7) | 4 (33.3) | |
| | Tested but Negative | 8 (28.6) | 20 (71.4) | |
| | Tested Positive | 2 (25.0) | 6 (75.0) | |
| Readily go for testing | Yes | 264 (49.4) | 270 (50.6) | 0.049 |
| | No | 144 (42.6) | 194 (57.4) | |
| Know / have testing sites? | Yes | 178 (62.7) | 106 (37.3) | 0.001 |
| | No Sites | 128 (39.0) | 200 (61.0) | |
| | Don't Know | 102 (39.2) | 158 (60.8) | |
| Conflict prevents testing | Yes | 64 (29.3) | 154 (70.7) | 0.001 |
| | No | 344 (52.6) | 310 (47.4) | |

which the government communicate useful information on COVID-19 is consumed mostly by the educated in public offices and is not reachable in most rural areas. The use of social media by the Ministry of Public Health in sensitizing the population in the South West and North West Regions on COVID-19 infection prevention and control (IPC) measures is recommended.

This study also provides valuable information on the health seeking practices of the residents of the North West and South West Regions during and towards the COVID-19 pandemic. This was of great importance considering the level of stigmatisation faced by COVID-19 patients and the high rate of suspicion among residents on the origin and

management of the Coronavirus 2019. Interestingly, a majority of the participants still preferred government hospitals (33%) of the different options, though a significant proportion (26.8%) practised self-medication. To mitigate the impact from self-medication during COVID-19 pandemic, it is worth looking into IPC solutions that work for Cameroon emphasized by Boum *et al.*³

Unfortunately, only two of the 20 participants who had either tested positive (8) or suspected positive (12) for COVID-19 had been to the different treatment centres set up by the government while a majority of those who had experienced COVID-19 related symptoms preferred self-medication. This is of great concern as most people with mild

COVID-19 symptoms often roll out the possibility of having the real epidemiological situation of COVID-19 infection in Cameroon due to the heightened level of disbelief on the existence of the virus among the population. These group who might be truly COVID-19 positive, risk transmitting the virus as they evade proper containment measures including self-isolation, quarantine and contact tracing.

The level of COVID-19 testing by participants was also a focus of this study. In the absence of a licenced treatment and with vaccine administration, still a far reality in Cameroon, testing remains one of the main means of controlling the spread of the virus and getting back to normalcy. The real-time reverse transcriptase polymerase chain reaction (RT-PCR) to detect human SARS-CoV-2 RNA in nasopharyngeal cells collected through a nasal swab remains the goal standard in COVID-19 diagnosis.^{2,16,17} This unfortunately is only available in the Regional headquarters of Bamenda and Buea with little capacity to match the sky-rocketing rate of infections. With the recent availability of rapid diagnostic test to identify SARS-CoV-2 antigen in a nasal swab though with low sensitivity,^{2,18} the government has been able to decentralise testing to district levels with promising results. Our findings revealed that while 61.2% of the participants are willing to go for a COVID-19 test (Table 4), only 32.6% knew a sample collection or testing site. This raises questions as to what has been done to sensitize communities on where they could access COVID-19 testing if presenting with symptoms. This, especially as we observed a significant association between participants who had been tested and their area of residents, with none from residents in the rural areas ever testing positive for COVID-19.

Although the Cameroon Ministry of Public Health has increased testing capacity to involve testing within districts following the Trace, Test and Track approach² up to 28% of respondents in conflict settings will still have to cover long distances to perform a COVID-19 test. This call for more decentralisation of testing sites within conflict settings especially considering 25% cannot access testing sites for fear of gunshots, kidnapping or ghost towns. The COVID-19 test is offered free at testing sites, yet 69% of respondents are not aware of this. This may account for low prevalence of subjects who have been tested for COVID-19 despite numerous ones who presented with symptoms. This could be due to the level of education, occupation and residence of the participants.

CONCLUSIONS

We believe this study presents the first findings on barriers to COVID-19 testing in conflict-affected settings more precisely in Cameroon. Our study observed that despite being aware of the existence of COVID-19 mostly through the social media, most of the participants lacked adequate knowledge on the mode of transmission, signs and symptoms and on the methods of prevention of the disease. On the health seeking practices of participants, we observed that a majority still practised self-medication avoiding testing and government treatment centres despite having experience signs/symptoms related to COVID-19. Also, a majority of participants who did not go for testing did not know or have a sample collection site in their area of residence while

some who were willing had to travel long distances before getting to a testing site. Finally, the armed conflict in the North West and South West prevented a quarter of participants from getting testing as they were either scared of gunshots, being kidnapped or the effects of ghost towns.

We recommend the use of social media by the Ministry of Public Health, civil society organisations and researchers to pass out correct information on COVID-19. Training of community health workers, religious and traditional leaders in sensitization on COVID-19 in conflict settings to demystify theories on COVID-19 is recommended. Also, additional creation of more testing sites within communities including the use of humanitarian health organizations in reaching the hard-to-reach conflict areas is encouraged. Lastly, further studies on COVID-19 testing uptake within districts are recommended.

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ETHICAL APPROVAL

Ethics approval was obtained from the Ethics Review Committee of the University of Bamenda (2020/0009H/Uba/IRB). All interviewers voluntarily provided informed consent and had the right to withdraw at any point during the interview. All authors consented to the publication of this paper.

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AVAILABILITY OF DATA

Data used in this study is available upon reasonable request to the authors.

AUTHOR'S CONTRIBUTION

Both authors contributed to the design, acquisition of data, analysis and interpretation of the data, drafting of the manuscript and gave approval of the final version and have agreed to be accountable for all aspects of the work.

COMPETING INTERESTS

The authors completed the ICMJE Unified Competing Interest form at (available upon request from the corresponding author), and declare no conflicts of interest.

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