

Original Research Article

Public Knowledge, Attitude and Practices towards COVID-19: A Cross-Sectional Study in the Conflict Affected Area of the Northwest Region of Cameroon

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Abstract

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The outbreak of corona virus pandemic in Wuhan, China since December 2019 has been the major public health concern. With the absence of an effective vaccine or treatment for the disease, current control measures are directed towards preventive measures to lessen disease burden and to curb the spread of the virus. This study assessed the knowledge, attitude and practice towards COVID-19 prevention among inhabitants of Bamenda municipality. A community-based cross-sectional survey of a random sample of 450 inhabitants living in Bamenda municipality was conducted between August 10th to 30th 2020 using questionnaire. Data were analyzed using SPSS Statistics 25.0 and were considered significant at $P \leq 0.05$. The level of knowledge, attitude and practice towards COVID-19 prevention among the 450 study participants were 80.0%, 28.4% and 51.6%, respectively. Adequate knowledge of COVID-19 was significantly higher in Christians (82.4%) when compared to Muslims (50.0%). Students (85.9%) and workers in the public service (84.2%) were 3.9 times (OR = 3.94, 95% CI: 1.62-9.58) and 3.5 times (OR = 3.45, 95% CI: 1.42-8.41), respectively more knowledgeable when compared to farmers 60.7%). Positive attitude was 3.2 times (OR = 3.23, 95% CI: 1.63-6.37) and 1.2 times (OR = 1.21, 95% CI: 0.59-2.50) higher in tertiary level of education and secondary level of education respondents, respectively when compared to their primary level of education counterparts. Only 32.4% practiced social distancing. Older (>50 years) and middle age persons (30-49 years) were 2.4 times (OR = 2.35, 95% CI: 1.20-4.59) and 1.7 times (OR = 1.71, 95% CI: 1.13-2.57) respectively, more likely to adequately practice COVID-19 preventive measures than younger age group respondents. Our study recorded good level of knowledge and practice on COVID-19 prevention with low attitude among participants. However, community-based sensitization campaigns are necessary to ensure optimistic attitudes and to improve on practice

Keywords: Attitude, Bamenda, Conflict affected, COVID-19, Knowledge, Practice

INTRODUCTION

In December 2019, the World Health Organization (WHO) reported an outbreak of an unknown virus causing pneumonia disease in Wuhan, Hubei Province, China (World Health Organization Time-line COVID-

2019, 2020). Further investigations revealed the pathogen was a single-stranded RNA virus belonging to the family Coronaviridae (Hassan et al., 2020). The disease manifestation was similar to the previously

reported severe acute respiratory syndrome coronavirus (SARS-CoV) and the Middle East respiratory syndrome coronavirus (MERS-CoV) though with a different genetic makeup, higher virulence, and fatality (Lin et al., 2020). The International Committee on Taxonomy of Viruses later identified the pathogen as a severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) causing the novel Coronavirus disease 2019 (COVID-19) (World Health Organization, 2020). From China, the virus rapidly spread across the world with severe mortality and morbidity and was declared a global pandemic by the WHO on March 11th, 2020 (World Health Organization Time-line COVID-2019, 2020).

COVID-19 is a contagious respiratory illness transmitted through the eyes, nose, and mouth, via droplets from coughs and sneezes, close contact (about 6 feet or two arm lengths) with an infected person and direct contact with contaminated surfaces (Guo et al., 2020). The incubation period is approximately one to fourteen days. Symptoms include fever, dry cough, dyspnea, headache, sore throat and rhinorrhea and sometimes hemoptysis (Cascella et al., 2020). The contagion could lead to severe respiratory problems or death, particularly among the elderly and persons with underlying chronic illnesses. Some infected persons however, are carriers for the virus with no symptoms while others may experience only a mild illness and recover easily (Adhikari et al., 2020). As there is currently no cure for COVID-19; medical treatments are limited to supportive care aimed at relieving symptoms, use of research drugs and therapeutics. There are however, a number of advances in the development of vaccines and therapeutics (World Health Organization, 2020; Heathline, 2020).

Cameroon recorded its first COVID-19 case on March 6th, 2020 and the government instituted strict containment measures on March 17th, 2020. These included school shutdowns, closure of drinking spots and eateries, banning all gatherings and limiting the number of passengers per public transport vehicle (World Health Organization. Coronavirus disease, 2019). With a continuous increase in the number of cases, the government instituted compulsory wearing of face mask on April 13th, 2020 (Cameroon, 2020). Unfortunately, then after, the government began relaxing these containment measures beginning with a lift of the band on drinking sports and limitations on the number of passengers on public transport vehicles. Schools officially resumed on June 1st, 2020 and Cameroonians since perceived things had returned to the normal and they were in the post COVID-19 era. On the contrary, the number of new cases were on the rise, picking to about 1,500 on July 6th, representing more than 1000% increase from when the containment measures were put in place (WHO, 2019). As of November 1st, 2020, Cameroon was recording over 200 cases weekly, all classified as community

transmission (World Health Organization, 2020). These statistics could be greatly under reported due to limited testing capability and the ravaging effects of an armed conflict in the Northwest and Southwest Regions that often disrupts normal life and impair functioning of healthcare services. Bamenda, the headquarters of the Northwest Regions is the most affected city as a result of the armed conflict. The city plays host to Internally Displaced Persons (IDPs) from across the Region. The city is also the 4th worst affected by COVID-19, (also the most affected by COVID-19 within the arm conflict inflicted cities) (North-West and South-West Region, Cameroon COVID-19 Update and Health Facilities Coverage Capacity, 2020). Denizens of Bamenda live in a perpetual state of fear amidst sporadic gunshots that often result in pandemonium, making social distancing momentarily impracticable (Human Rights Watch, 2020).

With numerous challenges plaguing the city of Bamenda resulting in precarious living conditions such as overcrowding, poor sanitation and disruption of health-care service delivery, it is imperative to assess the knowledge, attitude and practice (KAP) of Bamenda residents towards the prevention of COVID-19 especially within the paradox of relaxing awareness and rising cases. Knowledge, attitude and practice has been established as an important cognitive key in public health in disease prevention and ensuring health promotion. It evaluates a peoples' beliefs on the causes of a disease and their perception towards the prescribed prevention measures and treatment outcomes.

METHODS

For this cross-sectional study, a semi structured questionnaire was self-administered to inhabitants of Bamenda, Northwest Region of Cameroon during the period of 10th August – 30th August, 2020. Participants were residents of the Region who were 18 years or older and were selected conveniently from schools, markets, households, enterprises and travel agencies. Selection of participants took into account, the different age groups, gender, religion, education and profession. Participating in the research was voluntary and anonymous following a signed informed consent.

The sample size was determined from a population of 393,835 inhabitants (North-West and South-West Region, Cameroon COVID-19 Update and Health Facilities Coverage Capacity, 2020) using a margin of error of 5%, a confidence interval (CI) of 95%, and an expected response distribution of 50% (RAOSOFT, 2020). The minimum sample size estimated for the study was 384. We however enrolled a larger sample size of 450 participants in order to account for errors and non-respondents. The questionnaire comprised of four sections; Section A sought to obtain sociodemographic

data including age, gender, occupational status, marital status, educational qualifications, as well as religion. Section B assessed the knowledge of participants on COVID-19, mode of spread, mode of prevention, signs and symptoms. Section C obtained information on attitude and included questions on whether the participants think the virus could be contained through mask, social distancing, vaccines and therapeutics, if they would use a face mask as well as their belief on the origin of the virus. Section D on the other hand, evaluated participants' practices towards the prevention of COVID-19 such as social distancing, use of face mask and their willingness to self-isolate or be quarantined if needed. Data collected were double entered in Microsoft Excel 2019 and analyzed in Statistical Package for Social Science (SPSS) version 25 (SPSS, Inc., Chicago, IL, USA). Descriptive statistics were carried out to measure percentages, averages, and relative frequencies of the variables. Relationships between quantitative variables, such as knowledge, attitude and practices (KAP) towards COVID-19 prevention were assessed using the Pearson's Chi-Squared tests at 95% confidence interval (CI). The variables that were significantly associated with KAP were analyzed using binary logistic regression, and only variables with a significance threshold of less than 0.05 were included in the final model. Results were reported as odds ratio (OR) together with their confidence intervals. Statistical level of significance was set at $P \leq 0.05$.

The Ethics Review Committee of the University of Bamenda (2020/0009H/Uba/IRB) approved the study protocol. Only individuals who volunteered to participate by signing a written informed consent, after adequate sensitization on the project objectives were enrolled.

RESULTS

Socio-demographic Information

A total of 450 participants were enrolled in the study. The mean age of the study participants was 30.5 ± 10.8 years. Majority (50.9%) were females, of <29 years (75.1%) age bracket, were students (33.1%) with tertiary level of education (46.0%), single (66.4%) and of Christianity (89.8%) religious affiliation as shown on Table 1.

Participants Knowledge, Attitude and Practice on COVID-19

Knowledge of COVID-19 pandemic

Of the 450 participants interviewed, only 28.0% clearly stated that corona virus is a severe illness transmitted to

people by wild animals, 84.2% reported the virus is typically spread through contact with airborne droplets via breathing, sneezing, coughing or touching contaminated objects or surfaces. A majority of participants (88.0%) knew corona virus can be prevented by implementing measures such as regular handwashing, social distancing and disinfecting contaminated surfaces. More than 98% of the sampled population could attribute cough, fever, fatigue, sneezing, sore throat, shortness of breath as symptoms of COVID 19 (Table 2).

Attitude towards CPVID-19

Participants were asked six questions in assessment of attitudes (Table 2). Of all respondents, a majority 352 (78.2%) disagreed that persons with COVID-19 cannot transmit the virus to others when a fever is not present. Over 60% of the respondents (271) agreed that not all persons with COVID-19 will develop to severe cases. On the other hand, up to 54% of the respondents believed coronavirus was a biological weapon designed by the government of China to reduce population. Moreover, 5.6% (25) thought coronavirus is transmitted through 5G network with over 5.3% (24) having the notion that coronavirus is thought to be a plague caused by sins and unbelieve of human beings. Regarding whether or not they agreed that the COVID-19 situation would be successfully controlled, majority of the respondents 346 (76.9 %) had confidence that COVID-19 would successfully be controlled (Table 2).

Practices towards COVID 19

Most of the respondents 395 (87.8%) used mask when leaving their homes, 65.6% (295) wash hands and 57.1% (257) used hand sanitizers. Only 32.4% (146) practice social distancing (Table 2).

Overall, the categories of correct and wrong/no responses for all the aspects of knowledge, attitude and practice towards COVID-19 pandemic discussed above were put together to assess the level of knowledge, attitude and practice. A participant who had 3 correct responses to knowledge and practice options as indicated in bold was considered to have adequate level of knowledge, those with less than three correct responses were considered to have inadequate level of knowledge and practice of COVID-19. On the other hand, participants with 5 or more correct options for attitude was considered to have a positive (adequate) attitude or otherwise a negative (inadequate) attitude regarding COVID-19. Of the 450 respondents who participated in the study, 80% (360) had adequate knowledge, 51.6% (232) had adequate practice while only 28.4% (128) had positive attitude towards COVID-19 pandemic (Figure 1).

Table 1. Socio-demographic characteristics of participants (n = 450)

Variable	Frequency	Percentage
Gender	Male	221
	Female	229
Age	<29	257
	30-49	149
	>50	44
	mean age (m+SD)	30.5+10.8
Level of Education	Primary	71
	Secondary	172
	Tertiary	207
Marital Status	Single	229
	Married	130
	Divorced	21
Religion	Christianity	404
	Muslim	28
	Others	18
Occupational status	Business	53
	Fashion Design	21
	Student	149
	Informal Sector	66
	Public Service	133
	Farmer	28

Table 2. Participants knowledge, attitude and practice on COVID-19

Variable (n=450)	Frequency (%)	
	Correct	Incorrect
Knowledge of COVID-19		
1 The novel corona virus is a severe illness transmitted to people from wild animals	126(28.0)	324(72.0)
2 The corona virus is typically spread through contact with airborne droplets via breathing, sneezing or coughing; touching contaminated objects or surfaces, body contact	379(84.2)	71(15.8)
3 Corona virus can be prevented through regular hand washing and social distancing; disinfect contaminated surfaces	396(88.0)	54(12.0)
4 The most important symptoms of COVID-19 are cough, fever, fatigue, sneezing, sore throat, shortness of breath	443(98.4)	7 (1.6)
¹ Knowledge score	360(80.0)	90 (20.0)
Attitude towards COVID-19	Yes	No
1 Persons with COVID-19 can not transmit virus to the others when a fever is not present	98(21.8)	352(78.2)
2 Not all persons with COVID-19 will develop to severe cases	271(60.2)	179(39.8)
3 Corona virus is a biological weapon design by the government of China	243(54.0)	207(46.0)
4 Do you believe Corona virus is transmitted via 5G network	25 (5.6)	425 (94.4)
5 Corona Virus is thought to be plaque caused by sins and unbelieve of human beings	24(5.3)	426(94.7)
6 Do you agree that COVID-19 will finally be successfully controlled?	346(76.9)	104 (23.9)
² Attitude score	128(28.4)	322 (71.6)
Practice towards COVID-19 prevention	Yes	No
1 In recent days, have you worn mask when leaving home?	395(87.8)	55(12.2)
2 Do you wash your hand more often	295 (65.6)	155 (34.4)
3 In case of no water, do you sanitize your hands?	257(57.1)	192(42.9)
4 Do you practice social distancing where necessary?	146(32.4)	304(67.6)
³ Practice score	232(51.6)	218 (48.4)

bold: correct options

¹: ≥ 3 correct knowledge options = indigenous knowledge, < 3 correct knowledge options = inadequate knowledge²: ≥5 attitude options = good attitude, < 5 attitude options = inadequate attitude³: ≥3 correct options = good practice, < 3 correct options = inadequate practice

Table 3. Adequate knowledge on COVID-19 and demographics (N= 460)

Variable		Frequency	Adequate knowledge n (%)	Chi-Square	p-value
Gender	Male	221	170 (76.9)	2.57	0.109
	Female	229	190 (83.0)		
Age	<29	257	208(80.9)	5.587	0.061
	30-49	149	112(75.2)		
	>50	44	40(90.9)		
Level of Education	Primary	71	52(73.2)	4.63	0.99
	Secondary	172	134(77.9)		
	Tertiary	207	174(84.1)		
Marital Status	Single	299	239(79.9)	0.477	0.778
	Married	130	103(79.2)		
	Divorced	21	18(85.7)		
Religion	Christianity	404	333(82.4)	17.916	<0.001
	Muslim	28	14(50.0)		
	Others*	18	13(72.2)		
Occupational status	Business	53	41(77.4)	17.235	0.004
	Fashion Design	21	17(81.0)		
	Student	149	128(85.9)		
	Informal Sector	66	45(68.2)		
	Public Service	133	112(84.2)		
	Farmer	28	17(60.7)		

*Others: traditional authorities, atheist

Table 4. Positive Attitude of COVID-19 and demographics (N= 122)

Variable		Frequency	Positive Attitude n (%)	Chi-Square	p-value
Gender	Male	221	61 (27.6)	0.151	0.697
	Female	229	67 (29.3)		
Age	<29	257	73 (28.4)	0.42	0.979
	30-49	149	43 (28.9)		
	>50	44	12 (27.3)		
Level of Education	Primary	71	12 (16.9)	23.698	<0.001
	Secondary	172	34 (19.8)		
	Tertiary	207	82 (39.6)		
Marital Status	Single	299	84 (28.1)	0.058	0.972
	Married	130	38 (29.2)		
	Divorced	21	6 (28.6)		
Religion	Christianity	404	120 (29.7)	3.083	0.214
	Muslim	28	5 (17.9)		
	Others*	18	3 (16.7)		
Occupational status	Business	53	19 (35.8)	19.804	0.001
	Fashion Design	21	4 (19.0)		
	Student	149	41 (27.5)		
	Informal Sector	66	7 (10.6)		
	Public Service	133	51 (38.3)		
	Farmer	28	6 (21.4)		

*Others: traditional authorities, atheist

Association of Demographic Factors of Participants with Adequate Knowledge, Attitude and Practice towards COVID-19

At least 80% of respondents had adequate knowledge of

COVID-19. Although gender, age group, level of education, marital status were not associated with adequate knowledge of COVID-19 ($p>0.05$), female tended to be more knowledgeable than males (Table 3). Respondents with tertiary level of education (84.1%)

Table 5. Adequate practice of COVID-19 prevention and demographics (N= 232)

Variable	Frequency	Adequate Practice n (%)	Chi-Square	p-value	
Gender	Male	221	108 (48.9)	1.255	0.299
	Female	229	124 (54.1)		
Age	<29	257	116 (45.1)	10.656	0.005
	30-49	149	87 (58.4)		
	>50	44	29 (65.9)		
Level of Education	Primary	71	38 (53.5)	1.686	0.43
	Secondary	172	82 (47.7)		
	Tertiary	207	112 (54.1)		
Marital Status	Single	299	151 (50.5)	0.516	0.773
	Married	130	69 (53.1)		
	Divorced	21	12 (57.1)		
Religion	Christianity	404	212 (52.5)	1.588	0.452
	Muslim	28	13 (46.4)		
	Others*	18	7 (38.9)		
	Business	53	15 (28.3)		
Occupational status	Fashion Design	21	11 (52.4)	15.926	0.007
	Student	149	80 (53.7)		
	Informal Sector	66	31 (47.00)		
	Public Service	133	78 (58.6)		
	Farmer	28	17 (60.7)		

*Others: traditional authorities, atheist

tended to be more knowledgeable than those with secondary (77.9%) and primary (73.2%) levels of education. Adequate knowledge of COVID-19 was significantly higher in Christians (82.4%) when compared to Muslims (50.0%) and other beliefs (72.2%) such as tradition ($p < 0.001$). Binary logistic regression analysis revealed that, respondents who practiced Christianity were 4.7 times (OR = 4.69, 95% CI: 2.14-10.27) more likely to have adequate knowledge than their Muslims counterparts (Table 6). In addition, occupational status was significantly associated with knowledge of COVID-19 ($P = 0.004$). Students (85.9%) and workers in the public service (84.2%) were 3.9 times (OR = 3.94, 95% CI: 1.62-9.58) and 3.5 times (OR = 3.45, 95% CI: 1.42-8.41), respectively more knowledgeable when compared to farmers 60.7%).

On association of demographics with attitude towards COVID-19, less than 30% of respondents demonstrated positive attitude (Table 4). The findings revealed that there was no statistically significant relationship between positive attitude and demographic variables such as gender, age group, marital status and religion ($p > 0.05$). It was however observed that, attitude significantly increased ($p < 0.001$) from respondents with primary level of education (16.9%) to those with secondary level of education (19.8%) and was higher in those with tertiary

level of education (39.6%). Logistic regression analysis revealed that positive attitude was 3.2 times (OR = 3.23, 95% CI: 1.63-6.37) and 1.2 times (OR = 1.21, 95% CI: 0.59-2.50) higher in tertiary level of education and secondary level of education respondents, respectively when compared to their primary level of education counterparts (Table 6). A similar trend was observed in occupational status ($p = 0.001$). The proportion of respondents with positive attitude was higher within public service workers (38.3%) and business men (35.8%) than students (27.5%).

Overall, 51.6% of respondents adequately practice COVID-19 preventive measures. No significant relationship was observed between adequate practice and demographics such as gender, level of education, marital status and religion (Table 5). Females (54.1%) tended to practice good COVID-19 preventive measures than males (48.9%). The proportion of respondent with adequate practice increased from singles (50.5%) through married (53.2%) to respondents who were divorced (57.1%). Further analysis showed that adequate practice of COVID-19 preventive measures significantly increased with age group ($P = 0.005$). Older (>50 years) and middle age brackets (30-49 years) were 2.4 times (OR = 2.35, 95% CI: 1.20-4.59) and 1.7 times (OR = 1.71, 95% CI: 1.13-2.57) times respectively, more likely

Table 6. Factors Associated with good knowledge, attitude and practice on COVID-19 in the study population

Variable	Adequate knowledge	OR	95% CI	p-value	
Religion	Christianity	333(82.4)	4.69	2.14-10.27	<0.00*
	Muslim	14(50.0)		Reference	
	Others*	13(72.2)	2.6	0.73-9.26	0.003*
Occupational status	Business	41(77.4)	2.21	0.82-5.97	0.118
	Fashion Design	17(81.0)	2.75	0.73-10.37	0.135
	Student	128(85.9)	3.94	1.62-9.58	0.002*
	Informal Sector	45(68.2)	1.39	0.55-3.47	0.486
	Public Service	112(84.2)	3.45	1.42-8.41	0.006*
	Farmer	17(60.7)		Reference	
Variable	Adequate attitude	OR	95% CI	p-value	
Level of Education	Primary	12 (16.9)		Reference	
	Secondary	34 (19.8)	1.21	0.59-2.50	0.604
	Tertiary	82 (39.6)	3.23	1.63-6.37	<0.001*
Occupational status	Business	19(35.8)	4.71	1.80-12.35	0.002*
	Fashion Design	4(19.0)	1.98	0.52-7.59	0.317
	Student	41(27.5)	3.2	1.35-7.58	0.008*
	Informal Sector	7 (10.6)		Reference	
	Public Service	51 (38.3)	5.24	2.22-12.36	<0.001*
	Farmer	6(21.4)	2.3	0.70-7.60	0.172
Variable	Adequate practice	OR	95% CI	p-value	
Age	<29	116 (45.1)		Reference	
	30-49	87 (58.4)	1.71	1.13-2.57	0.01*
	>50	29 (65.9)	2.35	1.20-4.59	0.012*
Occupational status	Business	15 (28.3)	1.13	0.21-6.00	0.067
	Fashion Design	11 (52.4)	0.21	0.34-3.84	0.843
	Student	80 (53.7)		Reference	
	Informal Sector	31 (47.00)	0.90	0.17-4.76	0.901
	Public Service	78 (58.6)	1.13	0.32-3.96	0.026*
	Farmer	17 (60.7)	4.8	1.20-19.16	0.006*
Knowledge	Inadequate knowledge	33 (14.2)		Reference	
	Adequate knowledge	199 (85.8)	2.14	1.33-3.44	0.002*
Attitude	Negative attitude	156 (67.2)		Reference	
	Positive attitude	76 (32.8)	1.56	1.027-2.36	0.037*

*Others: traditional authorities, atheist

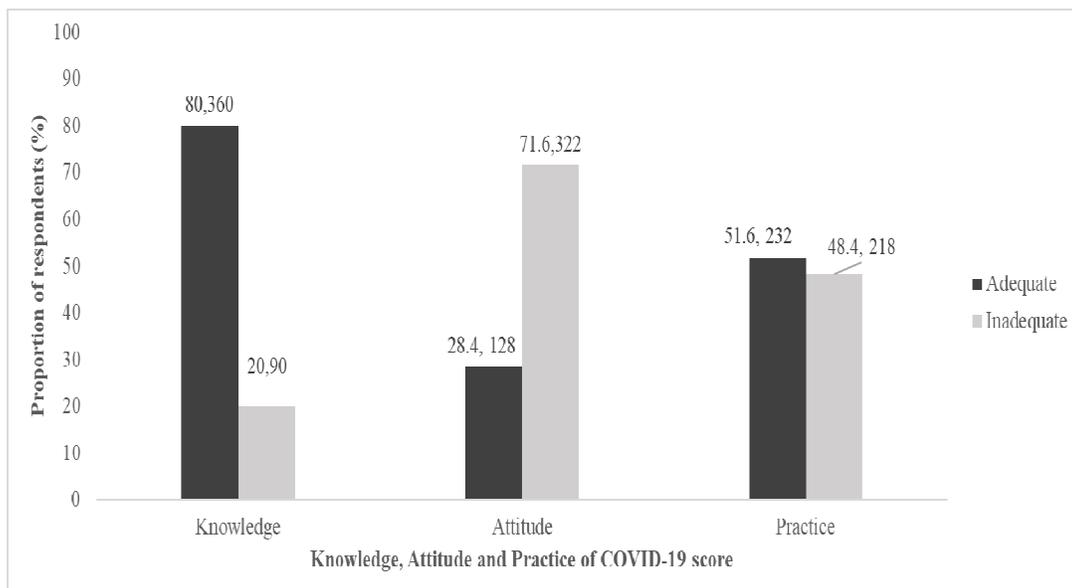


Figure 1. Adequate knowledge, attitude and practice towards COVID-19

to adequately practice COVID-19 preventive measures than younger age group respondents. It was further observed that adequate practice was significantly associated with occupational status ($p = 0.007$) as farmers (OR = 4.8, 95% CI: 1.20-19.16) and workers in the public service (OR = 1.13, 95% CI: 0.32-3.96) demonstrated adequate practice of COVID-19 prevention than students.

DISCUSSIONS

An outbreak of a severe acute airborne disease in a conflict affected region presents one of the worst humanitarian emergencies and such is the case in Bamenda, a cosmopolitan city affected for four years now by the ongoing anglophone conflict (Human Rights Watch, 2020). Considering the significant role prevention could play in such circumstances where healthcare facilities have been burnt and emergency healthcare delivery greatly impaired, this study assessed the knowledge, attitude and practice towards COVID-19 preventive measures among inhabitants of Bamenda, as a key to effective containment.

The findings showed that > 80% of the respondents have adequate knowledge of disease transmission, spread, signs and symptoms, and prevention. This study corroborates findings of Ngwewondo et al. (2020) which recorded a knowledge score of 84.2% in Cameroon. However, this finding is higher than that of the study in Northwest Ethiopia (Akalu et al., 2020), and that conducted in Buea, Cameroon (Tendongfor et al., 2020), a similar cosmopolitan town to our study area which

recorded a knowledge score lower than 25%. The reason for this discrepancy might be due to the differences in time of data collection and a tool used for assessment of knowledge. The data collection time in the study of (Tendongfor et al., 2020) was March, 2020 which coincided with the outbreak of the virus in Cameroon when most people were not adequately informed about COVID-19.

It was further observed that the level of adequate knowledge did not vary with socio-demographic parameters as gender, age group, level of education and marital status. This finding corroborates that of (Tendongfor et al., 2020). Although gender was not associated with knowledge, female respondents (83.0%) tended to be more knowledgeable than male respondents (76.0%). Similar findings were observed by (Ngwewondo et al., 2020). In this study, religion and occupational status were found to be associated with adequate knowledge of COVID-19. Christians demonstrated higher level of knowledge than Muslims and atheist. Students (85.9%) and public service workers (84.2%) demonstrated significantly higher levels of knowledge than business men (77.4%) or farmers (60.7%). The level of education attained significantly contribute to the knowledge in general. We observed in our study that students and public service workers had at least secondary level of education whereas most of the business men and farmers were not educated. Our findings are in line with similar studies conducted in Bangladesh (Zannatul et al., 2020) and Nigeria (Reuben et al., 2020). The most frequently identified knowledge gap among participants was related to disease transmission. Only 28.0% of participants believed that the

novel corona virus is a severe illness transmitted to people from wild animals. This observation was however lower when compared with finding of (Akalu et al., 2020) conducted in Ethiopia.

The prevalence of positive attitude in this study was 28%. This finding was very low when compared with studies conducted in China (Zhong et al., 2020), Malaysia (Azlan et al., 2020) and Iran (Erfani et al., 2020). This disparity might be due to a difference in sources of information, phase of the outbreak in the study area, knowledge, and worry related to the outbreak of study participants which led to the variation in the application of recommended actions and behaviors to prevent COVID-19. Moreover, the action taken by the government to lessen transmission of COVID-19 might also account for the variation. Over 50% of the respondents believed that the Coronavirus is a biological weapon designed by the government of China to reduce the population of the world. Another 5.6% had the impression that the Coronavirus is transmitted via 5G network, a widespread conspiracy especially in developed countries (Ahmed et al., 2020). Although most respondents had inadequate attitude towards COVID-19, 76.9% believed that COVID-19 pandemic will finally be successfully controlled in Cameroon and the world at large. This corroborates study conducted in China (Zhong et al., 2020) and Malaysia (Azlan et al., 2020). This positive perception by respondents could be attributed to the drastic measures put in place by the WHO and Cameroonian government to mitigate the spread of the virus.

In this study, gender, age group, marital status and religion were not associated with adequate attitude of respondents towards COVID-19 prevention. It was observed that attitude significantly increased with level of education. Respondents with tertiary level of education tended to have positive attitude towards COVID-19 prevention than those with secondary or primary levels of education. Similar to this finding, a study in China (Zhong et al., 2020) showed that higher level of education was associated with adequate attitude suggesting that education is an influential determining factor of healthy behavior (Park et al., 2018). The more someone is educated, the better his/her understanding on the preventive strategies related to COVID-19. This is of great concern considering that more than 90% of schools have been closed in this region for four years running (Human Rights Watch, 2020) and information flow has largely been controlled by the warring factions and perceived differently by their respective followers. Our result further revealed that occupation was associated with adequate attitude. Accordingly, students and workers of public service and students were 5.2 and 3.2 times, respectively more likely to have adequate attitude than respondents who were in the informal sector or farmers. Worth noting is the fact that workers in public service and students are more educated than those in the

informal sector thus supporting the fact that more someone is educated, the better his/her understanding on the preventive strategies related to COVID-19. It is worth mentioning that adequate knowledge of participants COVID-19 prevention was found to be significantly associated with inadequate attitude towards COVID-19 epidemic in this study. Zhong et al. (2020) reported similar findings in a study conducted in China.

Practice towards COVID-19 preventive measures was reasonable among 51.6% of respondents. Most respondents used worn face masks when going to public gathering and practicing proper hand hygiene as preventive measures in reducing the chances of being infected. This generally indicates willingness of the inhabitants of Bamenda municipality in implementing behavioral changes relevant in the fight against the COVID-19 pandemic. Similar positive attitude towards most preventive measures were earlier reported in China (Zhong et al., 2020), Egypt (Abdelhafiz et al., 2020) and India (Agarwal et al., 2020) although there was a reduction in the frequency of using face masks. Despite a majority of respondents knowing that social distancing is important in COVID-19 prevention, only 32.4% practiced it. This finding is consistent with a study in Nigeria (Zhong et al., 2020) who believed the virus can only be transmitted through close contact. This highlights a situation of will but lack of means as the city of Bamenda is a host to IDPs most of whom live more than eight in a single room and practice hawking and other unsafe jobs and are thus more likely to come in contact with other persons by the day. This presents with an opportunity to strengthen primary health care for emergency preparedness, response and recovery and empowerment of conflict affected communities in Cameroon with infection prevention and control measures as recommended by Ngo Bibaa (Ngo Bibaa, 2020).

In this study, age group and occupation were associated with adequate practice. The odds of adequate practice among Older (>50 years) and middle age (30-49 years) bracket were 2.4 times and 1.7 times, respectively more likely to adequately practice COVID-19 preventive measures than younger age group respondents. The higher adequate practice observed among older respondents might be to prevent risk of developing to severe illnesses. It has generally been observed that older people face significant risk of developing severe illness if they contract the disease due to physiological changes that come with ageing and potential underlying health conditions (World Health Organization, 2020).

CONCLUSIONS

With the absence of a vaccine or approved drug of choice for COVID-19 pandemic, community education on preventive measures remains the best control measure to

reduce the disease burden and spread. The present study documents a comprehensive examination of the knowledge, attitudes and practices of inhabitants in Bamenda municipality, a conflict affected area of the North West Region of Cameroon. The findings suggest that the inhabitants in Bamenda municipality have an acceptable level of knowledge and practice on COVID-19 prevention with low attitude. In addition, adequate knowledge was associated with positive attitudes and practices, suggesting that health sensitization programs by WHO and Cameroon ministry of public health aimed at mitigating COVID-19 pandemic are helpful for maintaining safe practices. As limitations to this study, we were unable to sample the different population strata due to the frequent gunshots that impeded our access.

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