Knowledge, Attitudes, and Practice of Cameroonians towards Governmental Measures against COVID-19, Cameroon: An Online Survey

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Authors’ contributions

This work was carried out in collaboration among all authors. All authors contributed to the development of the different sections of the questionnaire used. Author MBHT created the google form questionnaire. Authors FCB and TBHM wrote the Background to the study, authors RSE and IF worked on the methodology, Author FT analyzed the data collected. Author BKM interpreted the results. Authors FCB and BMK discussed the results. Authors RES, FCB, BMK, and IF, proofread the work. All authors read and approved the final manuscript.

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ABSTRACT

Background: The outbreak of the COVID-19 epidemic left no nation indifferent in adopting measures to fight against the spread of the disease. This survey aimed at assessing the knowledge, attitude, and practice of Cameroonians towards preventive measures against the spread of COVID-19 in Cameroon.

Methodology: It was a cross-sectional online survey conducted nationwide via self-administration of a google form questionnaire in March 2020. Questionnaires were shared via Facebook and WhatsApp. Being a Cameroonian based in Cameroon was the main inclusion criteria. Data were analyzed using SPSS software.

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1. INTRODUCTION

According to the World Health Organization [1], the novel Coronavirus disease 2019 (COVID-19) is an infectious disease caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) which is of the same family as SARS-CoV-1, which caused the Severe Acute Respiratory Syndrome (SARS) outbreak in 2003, all isolated from bats [2,3,4]. These viruses come from the virus family ‘Coronaviridae’ recognized in 1968 and named as such because their viral structure and intracellular budding sites differentiated them from other RNA viruses [5]. COVID-19 is one of the emerging infections in recent decades resulting in major outbreaks with significant public health and economic impacts [6]. The virus is transmitted from human to human via droplets coughed or exhaled by infected persons and by touching droplet-contaminated surfaces or objects and then touching the eyes, nose, or mouth [7-9]. The disease is a highly contagious disease with fever, dry cough, fatigue, myalgia, and dyspnea as major clinical manifestations [10,3,11]. The first human cases of COVID-19, the disease caused by the novel coronavirus, subsequently named SARS-CoV-2, were first reported by officials in Wuhan City, China, in December 2019 [8,12]. The World Health Organization (WHO) declared the 2019–20 coronavirus outbreak a Public Health Emergency of International Concern (PHEIC) on 30 January 2020 [13] and a pandemic on 11 March 2020 [14]. Most people infected with the COVID-19 virus experience mild to moderate respiratory illness and recover without requiring special treatment. Older people and those with underlying medical problems like cardiovascular disease, diabetes, chronic respiratory disease, and cancer are more likely to develop serious illnesses [14].

As of now, diagnosis of COVID-19 is based on detection of unique sequences of virus RNA by real-time reverse-transcription-polymerase chain reaction (rRT-PCR) appropriate for the acute phase of illness [4]. However, serologic tests also exist; antibodies detected are mainly divided into IgM and IgG. In general, most SARS-CoV-2 specific IgM antibodies were positive after 3-5 days of onset, and the recovery period of IgG antibody titers was 4 times or higher than that of the acute phase. The CDC holds that antibody testing should not be used as the sole basis to diagnose or exclude infection [15,4]. Another diagnostic test used is the Rapid antigen test. In theory, rapid antigen tests have advantages of fast detection speed and low cost but have poor sensitivity and specificity for detecting coronavirus except for MERS as yet [16,4]. As lung abnormalities may appear ahead of clinical manifestations and Nucleic Acid Amplification Test (NAAT), some studies have recommended early chest computerized tomography (CT) for screening suspected patients with COVID-19 [17-19]. Currently, there are no definitive and specific treatment regimens against COVID-19 [20]. Treatment, therefore, relies on strategies including early diagnosis, timely reporting, isolation, and supportive treatments as well practicing the preventive measures (regular and thorough cleaning of hands with soap and running water or use alcohol-based hand sanitizers, maintaining social distancing, avoiding crowded places, avoiding touching the mouth, nose, and eyes amongst many others) as an important line of actions against COVID-19 infections [14,21] (WHO, 2020; CDC, 2020). As
of now, the main therapies being used to treat the disease are antiviral drugs, chloroquine/hydroxychloroquine, and respiratory therapy [22]. As the pandemic spread across the globe, more and more countries have been forced to adopt strict measures to fight coronavirus from closing down borders to more drastic measures like confining the populations [23]. Cameroon, like many States in the world, Cameroon is not spared by this pandemic. From the very first hours of its emergence, the Government implemented a prevention and response plan aimed at stemming the spread of this epidemic [24]. The first case was confirmed on 24 February 2020, and today, over 8 000 individuals have been tested positive [25, 26].

As said Geldsetzer et al., (2020), human behavior is influenced by people's knowledge and perceptions [27]. We, therefore, had as objective to investigate the effects of the 13 governmental measures on the fight against COVID-19 and the latter 7 additional measures on Cameroonians living in Cameroon. Evaluating the knowledge, perception, and compliance of the population to governmental measures would bring health authorities into understanding the reality in the field thus help in constructive decision making in the fight against COVID-19. The aim of this study was therefore to assess the knowledge, attitude, and practice of Cameroonians towards Governmental measures against the spread of COVID-19 in Cameroon.

2. METHODS AND MATERIALS

2.1 Research Design and Data Collection

The study adopted survey research which allowed for the collection of data across the national territory using an online form. It was a cross-sectional online survey conducted nationwide via self-administration of a Google form questionnaire from the 7th to the 21st of March 2020. Cameroonians of 15 years and above, residing in the national territory from the time the pandemic started in Cameroon to the time of the study were eligible to participate.

A standardized online internet questionnaire was produced in the two official languages (French and English). This questionnaire comprised four sections: data on the socio-demographic characteristics of participants; the awareness of COVID-19 in general and in particular the awareness of the 20 measures put in place by the Government of Cameroon as a response plan against the spread of COVID-19 as well as some WHO preventive strategies; the attitude and practice of Cameroonians towards the aforementioned governmental measures and finally the compliance of Cameroonians to these measures. The link was sent to social media platforms including WhatsApp, Twitter, and Facebook for participants to fill out and submit. The link was shared to Facebook platforms that had thousands of Cameroonians and to various WhatsApp groups.

The instruments for data collection were assessed in terms of validity and reliability to ensure quality. Face and content validity was ensured by establishing a logical link between questionnaire constructs and the research objectives and expert reviews on the ability and aptness of items of the instruments. This ensured that the test items on the questionnaire should elicit the right responses.

The purpose of this study, study objectives, and what was expected from the participants were clearly stated in the introductory part of the questionnaire. Also, important instructions were stated in these questionnaires with regards to the fact that participants were not supposed to submit this questionnaire more than one time; this was to limit the bias of duplicates responses. Also, respondents were asked not to share their answers with friends or colleagues. The filled and submitted versions were received on an online server by the I.T technician. The English and French versions were merged.

2.2 Data Analyses

Questionnaire data was analyzed using the IBM Statistical Package for Social Science (SPSS) version 25 and Microsoft excel. Descriptive statistics which involve collecting, summarizing, and presenting data using frequency and percentages were employed inferential tool used was the correlation to establish the relationship between knowledge of COVID-19 and some preventive measures.

3. RESULTS AND DISCUSSION

3.1 Results

This study included 446 participants amongst which, 232 (52.3%) were males and 212 (47.7%) were females giving a sex ratio of 1:1. The most represented age group was 26-35.
3.1.1 Demographic characteristics of participants

From Table 1, 446 individuals from all regions of Cameroon participated in the online survey. The study participants constituted 232 (52.3%) males and females 212 (47.7%). Among which majority 221 (49.8%) were between the ages of 26 to 35 and the least represented constituted those 60 years and above. With regards to educational qualification, most of the respondents, 151 (34.0%) were Bachelor’s Degree holders and only 7 (1.6%) and 25 (5.6%) for CAPIEM and Ph.D. holders respectively. Slightly more than half, 252 (56.8%) were single. More than a quarter of the participants, 143 (32.2%) were from the North West and the least represented regions were East, South, and the Extreme North representing less than 5% of the participants. Nurses were the most represented profession, 91 (20.5%).

3.1.2 Awareness of Cameroonians on COVID-19 and preventive measures by the Cameroon Government

As seen in Table 2, almost all, 444 (99.6%) of participants agreed to have heard about COVID-19 while only 2 (0.4%) indicated that they have never heard of COVID-19 and, as such, were dropped from the analysis. This gave the study an actual sample of 444 participants. Social media, 244 (55.0%) and TV/Radio, 139 (31.3%) were the main means by which participants were first informed of COVID-19.

Majority of the participants indicated that the Cameroon government had instituted about 13 preventive measures to limit the spread of the COVID-19, 174 (39.19%), more than ¾ of the participants were aware of the recent additional measures taken by the Cameroon government to combat COVID-19, 384 (86.49%). Amongst those who knew about the new measures, about 98.87% mentioned the systematic wearing of face masks in all public places. Meanwhile, almost a quarter 109 (24.55%) had no idea about the number of preventive measures set by the Cameroon government to limit the spread of the pandemic. Difficulty in breathing amasses the most represented symptom, according to 402(90.54%) of the respondents, followed by fever, cough, running nostrils, itching throat, headache, and painful muscles, respectively. With regards to hygienic measures, disinfecting the surroundings and any working tools appeared the highest, 267 (23.16%) among respondents; followed by hand washing with soap and running water or using alcohol-based hand sanitizer, 222(19.25%), others were respecting social distances and wearing of hand gloves.

3.1.3 Attitude adopted by Cameroonians towards the different preventive measures put in place by the Government to limit the spread of COVID-19

Evident from Table 4, majority of the respondents, 425 (95.72%) regarded COVID-19 to be a viral infection that can infect everyone. An insignificant proportion of 10 (2.25) considered it as a White man’s disease while only 9 (2.03%) doubt its existence.

As shown in Table 4, less than half of the participants 194 (43.7%) mentioned that COVID-19 is transmitted mostly from person to person, 210 (47.3%) mentioned via eating contaminated food, and only 22 (4.95%) mentioned droplets of an infected person to an uninfected person through sneezing. A great proportion of the respondents 408/444 (91.9%) affirmed that the most efficient way to limit the spread of COVID-19 was by respecting hygienic measures and social distancing. While 7 (1.6%) believed that the spread can only be limited through prayers and fasting, in line with 7 (1.60) who believes the pandemic is a sign of end-time, However, more than half, 261 (58.8%) were optimistic that the pandemic will one-day stop if people respect hygienic measures and all the governmental preventive measures.

Table 5, An evaluation of whether the governmental measures taken so far are sufficient enough to stop the spread of the COVID-19 in Cameroon, recorded that 149 (33.56%) think the measures are not sufficient unless additional measures such as total confinement in all affected regions travel bans from affected zones to none affected zones are implemented, 99 (22.3%) of them mentioned that unless the government provides face mask and hydro-alcoholic solution to the population and food provisions, the government measures would not be effective. To about 40 (9.0%) of respondents, more testing should be done.
Table 1. Demographic Characteristics of Participants

| Gender          | Number (n) | Percentage (%) |
|-----------------|------------|----------------|
| Male            | 232        | 52.3           |
| Female          | 212        | 47.7           |
| Total           | **444**    | **100.0**      |
| 18 to 25        | 144        | 32.4           |
| 26 to 35        | 221        | 49.8           |
| 36 to 44        | 55         | 12.4           |
| 45 to 55        | 15         | 3.4            |
| 56 to 60        | 6          | 1.4            |
| 60+             | 3          | 0.7            |
| Total           | **444**    | **100.0**      |

| Age             | Number (n) | Percentage (%) |
|-----------------|------------|----------------|
| Ordinary Level  | 14         | 3.2            |
| CAPIEMP         | 7          | 1.6            |
| Others          | 35         | 7.9            |
| Advance Level   | 46         | 10.4           |
| HND             | 28         | 6.3            |
| Bachelor's Degree | 151    | 34.0           |
| Master's Degree | 138        | 31.1           |
| PhD             | 25         | 5.6            |
| Total           | **444**    | **100.0**      |

| Level of Education | Number (n) | Percentage (%) |
|--------------------|------------|----------------|
| Single             | 252        | 56.8           |
| Married            | 149        | 33.6           |
| Widow              | 43         | 9.7            |
| Total              | **444**    | **100.0**      |
| Northwest          | 143        | 32.2           |
| Southwest          | 106        | 23.9           |
| West               | 130        | 29.3           |
| Littoral           | 28         | 6.3            |
| Central            | 28         | 6.3            |
| East               | 4          | 0.9            |
| South              | 3          | 0.7            |
| Extreme North      | 2          | 0.5            |
| Total              | **444**    | **100.0**      |

| Marital Status    | Number (n) | Percentage (%) |
|-------------------|------------|----------------|
| Student           | 86         | 19.4           |
| Teacher           | 72         | 16.2           |
| Nurse             | 91         | 20.5           |
| Epidemiologist    | 33         | 7.4            |
| Humanitarian worker | 32     | 7.2            |
| Medical laboratory technician | 31 | 7.0 |
| Medical doctor    | 18         | 4.1            |
| Others            | 81         | 18.2           |
| Total             | **444**    | **100.0**      |

Table 2. Respondents' knowledge about COVID-19 and awareness of Governmental preventive measures

| Question                                      | Response   | Frequency (n) | Percentage (%) |
|-----------------------------------------------|------------|---------------|----------------|
| Have you heard of the new Corona Virus (COVID19)? | Yes        | 444           | 99.6           |
|                                               | No         | 2             | 0.4            |
| Total                                         |            | **446**       | **100.0%**     |
| Where did you First hear about COVID19?       | Social media | 244           | 55.0           |
|                                               | TV/Radio   | 139           | 31.3           |
|                                               | Health Professionals | 39 | 8.8 |
| Total                                         |            | **444**       | **100.0**      |
Government communication 14 3.2
Friends/Neighbors 8 1.8
Total 444 100.0%

Where the COVID19 was first discovered?
China 442 99.5
Cameroon 2 0.5
Total 444 100.0%

The number of preventive measures put in place by the Cameroon government to limit the spread of COVID-19

| Options                        | Frequency (n) | Per R  | Per part | Rank |
|--------------------------------|---------------|--------|----------|------|
| Fever                          | 392           | 16.11  | 88.29    | 2    |
| Cough                          | 392           | 16.11  | 88.29    | 3    |
| Sore throat (Itching throat)   | 289           | 11.88  | 65.09    | 5    |
| Headache                       | 247           | 10.15  | 55.63    | 6    |
| Running nostrils               | 299           | 12.29  | 67.34    | 4    |
| Painful muscles                | 194           | 7.97   | 43.69    | 8    |
| Difficulty breathing           | 402           | 16.52  | 90.54    | 1    |
| Sneezing                       | 218           | 8.96   | 49.10    | 7    |
| Wearing of hand gloves         | 221           | 19.17  | 49.77    | 3    |
| Disinfect your surroundings and any working tools | 267 | 23.16 | 60.14 | 1 |
| Washing hands with soap and running water or using alcohol based hand sanitizer | 222 | 19.25 | 50.00 | 2 |
| Maintaining social distance of at least 1.5m in public | 187 | 16.22 | 42.12 | 5 |
| Take Enough Alcohol            | 65            | 5.64   | 14.64    | 6    |
| Drink Warm Water, eat garlic and ginger | 191 | 16.57 | 43.02 | 4 |

Total 444 100.0%

Table 3. Assessing Respondents Knowledge on Symptoms and preventive hygienic measures Against of COVID 19

Table 4. Respondents Views about COVID-19 transmission and measures of stopping its spread

| Options                                           | Frequency (n) | Percentages (%) |
|---------------------------------------------------|---------------|-----------------|
| It's a viral infection that can infect everyone   | 425           | 95.72           |
| It's the White man's disease                       | 10            | 2.25            |
| It doesn't exist                                   | 9             | 2.03            |
| Total                                             | 444           | 100.0%          |

Respondents Views on how COVID-19 transmission

| Options                                           | Frequency (n) | Percentages (%) |
|---------------------------------------------------|---------------|-----------------|
| Transmitted Mostly from Person to Person           | 194           | 43.69%          |
| Eating Contaminated Food                           | 210           | 47.30%          |
| Droplets of An Infected Person to an Uninfected Person | 22           | 4.95            |
Options | Frequency (n) | Percentages (%)
--- | --- | ---
Droplet infection (sneezing) | 6 | 1.35%
Through Contaminated Injections or Blood Transfusion | 12 | 2.70%

The most efficient way to limit the spread of COVID-19

| Options | Frequency (n) | Percentages (%)
--- | --- | ---
By respecting hygienic measures and social distancing | 408 | 91.9%
Only through prayers and fasting | 7 | 1.6%
Man can't be protected from COVID-19 | 5 | 1.1%
No Opinion | 24 | 5.4%
**Total** | **444** | **100%**

How the spread of COVID-19 can be stopped in Cameroon

| Options | Frequency (n) | Percentages (%)
--- | --- | ---
Yes, by respecting hygienic measures and all the governmental preventive measures | 261 | 58.8%
No, all Cameroonians will be killed by COVID-19 | 10 | 2.3%
Yes, by not talking to anyone at home or in public | 166 | 37.4%
No, it's the end time as some Christians believe | 7 | 1.6%
**Total** | **444** | **100%**

Will the spread of COVID-19 stop someday in Cameroon?

| Options | Frequency (n) | Percentages (%)
--- | --- | ---
Yes, by respecting hygienic measures and all the governmental preventive measures | 261 | 58.8%
No, all Cameroonians will be killed by COVID-19 | 10 | 2.3%
Yes, by not talking to anyone at home or in public | 166 | 37.4%
No, it's the end time as some Christians believe | 7 | 1.6%
**Total** | **444** | **100%**

Table 5. Respondents views effectiveness of Governmental Measures to stop the spread of the COVID-19 in Cameroon

| Options | Frequency (n) | Percentages (%)
--- | --- | ---
No, unless the government add other measures like total confinement in all affected regions, travel bans from affected zones to none affected zones | 149 | 33.56%
Unless the government provides face mask and hydro-alcoholic solution to the population and food provisions | 99 | 22.30%
Yes, if the measures already put by the government are followed up and respected | 23 | 5.18%
If the government should carry out more testing to know the real status of the nation | 40 | 9.01%
If the government can reinforce the measures put in place and also assist the population especially reduction of fuel prices to reduce transportation cost so as to ease measures to be respected by transporters | 7 | 1.58%
Mass testing | 30 | 6.76%
Yes, if the measures already put by the government are followed up and respected | 82 | 18.47%
Others | 14 | 3.15%
**Total** | **444** | **100.0%**

3.1.4 Compliance of Cameroonians to barrier measures and governmental measures against COVID-19

As shown on Table 6, A great proportion of the respondents admitted that they practice hand washing 405/444(91.2%) against a few who refused 16/444 (3.6%). Among those who practice hand washing, about 124/405 (30.6%) washed their hands often with running water, while only 76(19.3) did proper handwashing by washing their hands with soap and running water for at least 20 seconds concentrating on the thumbs and fingernails while others ensure that when in the market they always use hand sanitizer to protect their hands. Meanwhile, those
who do not practice handwashing gave varied reasons such as, lack of water and soap all the time because of too much water cut in our society alongside electricity shortage. Lack of money to get a hand sanitizer 20(4.5%). Moreover, a few believe hand-washing alone cannot stop the spread of the virus since it is a respiratory virus.

Almost all the respondents 403(90.77%) admitted that they regularly make use of facemasks when going out of their homes against a few 41 (9.23).

Concerning social distancing, majority of the respondents do not respect social distancing, 230(51.8%) whereas 214 (48.2%) agreed that they practice social distancing.

### 3.1.5 The spearman correlation between knowledge of covid-19 and preventive measures

Table 7 establishes the relationship between the knowledge of COVID-19 and Preventive measures. There was a semi-strong insignificant positive relationship between knowledge of COVID-19 and the use of hand sanitizer ($r=0.406$, $p=0.097$) as well as handwashing with soap and running water ($p=0.005$). There was therefore no statistical barking that the use of hand sanitizers or handwashing among Cameroonians increased as their knowledge on COVID-19 increased. However, there was a strong positive significant relationship between knowledge of COVID 19 and the use of face masks ($r=0.701$, $p=0.001$).

### Table 6. Compliance of participants to preventive measures of handwashing and wearing of face masks

| Questions                        | Options                                                                 | Frequency (n) | Percentage (%) |
|----------------------------------|-------------------------------------------------------------------------|---------------|----------------|
| Hand washing                     | Yes                                                                     | 405           | 91.2           |
|                                  | No                                                                      | 16            | 3.6            |
| **Total**                        |                                                                        | **444**       | **100.0%**     |
| If YES, how do you practice hand washing | I wash my hands often with running water and soap                      | 124           | 30.6           |
|                                  | I use an alcohol based hand sanitizer as many times as possible         | 160           | 39.5           |
|                                  | When I am at the market, I always use hand sanitizer to protect my hands. | 1             | 0.3            |
|                                  | I wash my hands with soap and running water for at least 20 seconds concentrating on my thumbs and my fingernails | 75            | 18.5           |
|                                  | None response                                                           | 45            | 11.1           |
| **Total**                        |                                                                        | **405**       | **100.0%**     |
| If NO, why?                      | Because I do not have water and soap all the times                      | 4             | 25             |
|                                  | Too much water cut in our society                                       | 1             | 6              |
|                                  | No lights, No Running Water.                                            | 1             | 6              |
|                                  | I do not have money to get a hand sanitizer                             | 6             | 37.5           |
|                                  | Hand washing alone cannot stop the spread of this pandemic.             | 1             | 6              |
|                                  | I don't believe hand washing prevents us from COVID-19 since it is a respiratory virus | 2             | 13.5           |
|                                  | If I do not touch or greet anyone then I cannot be contaminated         | 1             | 6              |
| **Total**                        |                                                                        | **16**        | **100**        |
| Have you been recently regularly using face masks when going out of your home? | Yes                                                                    | 403           | 90.77          |
|                                  | No                                                                      | 41            | 9.23           |
| The practice of social distancing | Yes                                                                     | 214           | 48.2           |
|                                  | No                                                                      | 230           | 51.8           |
the results obtained by Zhong and collaborators in China (Zhong et al., 2020) who found that fever, dry cough; fatigue, myalgia, and dyspnea were the main symptoms of the disease [3]. These results show that Cameroonians are more concerned about their health and adopt an information-seeking attitude to stay healthy.

With respect to the awareness of Cameroon’s government adopted measures against the spread of COVID-19, not up to half of the respondents, 174 (39.19%) were aware that the government of Cameroon released 13 measures. While a fewer number, 61 (13.74%) confirmed the Cameroon government so far have put in place 20 measures to fight against the rapid spread of the pandemic. This show that quite a good number of Cameroonians were not informed of additional 07 measures taken by the government amongst which was the systemic wearing of face mask in all public places. Although some Cameroonians knew the government put in place measures to combat the spread of the pandemic, a significant proportion were not aware of the number of measures put in place and by essence were not aware of the content of the measures. This might constitute a serious problem in the fight against the pandemic if ignorance of these measures could promote the spread of COVID-19 loving behaviors at the level of the population which will compromise the government measures. To this effect, social media, TV, and Radio communication are not enough to pass on useful information to the population, since some are simply not interested in watching the news. It will therefore be of importance for other measures like forming local communicators which will therefore be of importance for other measures like forming local communicators among the populations. Also, it will be necessary for the government to make sure that these measures are not only known but implemented.

Regarding the association between knowledge on COVID-19 and use of hand sanitizers, there was a semi-strong insignificant positive relationship using inferential statistics ($r=0.406$, $p=0.097$); a significant positive relationship between knowledge on COVID-19 and handwashing with soap ($r=0.320$, $p=0.005$)

### Table 7. The Spearman Correlation between knowledge of COVID-19 and Preventive measures

| Spearman Correlation | Knowledge of Corona Virus (COVID-19) | Knowledge of Corona Virus (COVID-19) | Knowledge of Corona Virus (COVID-19) |
|----------------------|--------------------------------------|--------------------------------------|--------------------------------------|
| Use of Hand sanitizer | $r=0.406$, $p=0.097$                  | $r=0.320^*$, $p=0.005$               | $r=0.701^*$, $p=0.001$               |
| Handwashing with soap |                                      |                                      |                                      |
| Face masks           |                                      |                                      |                                      |

*: Correlation is significant at the 0.001
and a strong positive significant relationship between knowledge of COVID 19 and the use of face masks (r=0.701, p=0.001). This positive relationship between knowledge and behavior of Cameroonian with regards to the preventive measures of COVID-19 is in line with the study of Zhu and Xie (2014) who found that there was a significant relationship between knowledge and attitude since their results indicated that an individual’s attitude changed significantly after reading the information, and the attitude change pattern was affected by the information type and the interaction between the information type and the participant’s knowledge level [29].

With regards to the perception of Cameroonian on COVID-19, majority of respondents are favorable to the fact that COVID-19 is a viral infection that can infect everyone (95.72%) in accordance with the study of Akwa and collaborators in Cameroon [12]. More of the respondents incriminated person-to-person contacts, droplets infections through coughing or sneezing, eating contaminated food as the principal means of transmission. A larger majority (91.90%) of participants approved that the most efficient way to limit the spread of the pandemic was by respecting hygienic measures and social distancing. This corroborates with the result of the study of Geldsetzer (2020) in the USA where he affirmed that participants had good knowledge of the mode of transmission [27]. Concerning the question of whether the pandemic will end someday in Cameroon, more than half (58.8%) thinks it is possible if hygienic and governmental measures are respected, while fewer do not believe COVID-19 will end in Cameroon because they think it is end time (1.6%). This is different from the results obtained by Zhong et al., (2020) where about 97.1% of Chinese believed their government will succeed in the fight against the pandemic [3]. This difference could be explained by the sociopolitical characteristics that differ for both countries.

To the respondents, on the question to know if governmental measures were sufficient enough to stop the spread of the pandemic, the governmental measures taken so far can only be sufficient enough to stop the spread of the COVID-19 in Cameroon if the government adds other measures like total confinement in all affected regions, travel bans from heavily affected zones to non/less affected zones (33.56%) and the provision of face masks, hand sanitizers and foodpieces of stuff, and above all assurance that these measures be respected all over the national territory. A few, 81 (18.47%) think the governmental measures are enough to stop the spread if only the population strictly respects these measures.

Generally, this high level of awareness and somewhat favourable attitude of the participants towards COVID-19 could be explained by the fact that most Cameroonian are active in the quest for information about the deadly COVID-19 pandemic through various means they dispose of; social media, radio, and television. Also, the country is not left out in the course of modernization of the world in terms of evolving technologies like the widespread of android phones permitting a rapid search of information on actual problems of global importance like the present pandemic. Moreover, the fact that the virus was already spreading and deadly in other parts of the world, Cameroonian adopted a curious attitude towards information regarding COVID-19 because they knew it will somehow spread to Cameroon. Also, the morbidity and mortality of the pandemic especially in Europe and America would have made Cameroonian adopt a good attitude towards COVID-19 so as not to get infected.

Regarding participant’s compliance with the governmental and hygienic measures, several aspects were evaluated amongst which, the practice of handwashing. A great proportion of the respondents admitted that they practice handwashing 405/444 (91.2%) against a few, 16/444 (3.6%) who do not practice handwashing as a preventive measure against COVID-19. Among those who practice hand washing, about 124/405 (27.9%) washed their hands often with running water and soap while 160/444 (36.0%) use alcohol-based hand sanitizers as many times as possible. The reasons for not practicing or poorly practicing handwashing (Table XI) were non-accessibility to water (3.2%), lack of finances to get soap often, or alcoholic-based hand sanitizers (4.5%), while a few did not believe hand washing can stop the spread of a respiratory virus. These results simply denote that majority did not practice handwashing not because they actually lacked finances or non-accessibility to water but probably due to the non-compliance with this role, not making it a habit. With respect to the use of face masks, majority of respondents were compliant with the use of face masks when going out of their homes in recent days (90.77%). This is slightly lower than the proportion of respondents who wore masks in the study of Zhong and collaborators.
(98%) in China. This difference could be attributed to the difference in sample size since they had up to 6919 participants [3].

4.1 Limits of the Survey

The bias of participation in the study since not every Cameroonian have an android phone, good internet connection or live in regions of stable electricity. Also, the sample size was small. To add, it is difficult for such studies to control the eligibility criteria because Cameroonian who did not fall into the eligibility criteria could have responded to the questionnaire. Finally, the risk of double respondents was also possible with this type of survey.

5. CONCLUSION AND RECOMMENDATIONS

5.1 Conclusion

In as much as most Cameroonian have heard of the COVID-19 pandemic mainly through social media and radio and television. The level of knowledge on the pandemic, transmission, symptoms, hygienic, and governmental preventive measures was appreciable.

Generally, attitudes towards these measures was positive among most participants who was optimistic that the virus will be defeated if preventive and governmental measures are respected. However, this was not the same with compliance. This was relatively low concerning measures concerning handwashing, social distancing, and usage of masks. Though most participants practiced hand washing, a considerable proportion didn’t do it properly due to several reasons amongst which lack of water and soap all the time because of too much water cut in our society alongside electricity shortage; lack of money to get a hand sanitizer and believes. A good number of Cameroonian also use alcohol-based hand sanitizer.

This study revealed that there was no significant relationship between the gain of knowledge on COVID-19 and the user of hand sanitizer. However, a very significant relationship was shown between the gain of knowledge and handwashing with soap and running water as well as the use of face masks. This only comes to show that the additional governmental measures put in place to fight against COVID-19 in Cameroon are yielding fruits as most Cameroonian adhere to them though much is still left to be done.

5.2 Recommendations

The Cameroon government should ensure that follow-up and stringent measures are implemented to ensure that preventive and control measures are respected.

The government should create or encourage the creation of local committees or encourage the involvement of the local and non-government organizations in the fight most especially in sending out proper communication and information.

The populations should be provided financial and material aid to increase compliance with preventive measures

CONSENT

As per international standard or university standard, respondents’ written consent has been collected and preserved by the author(s).

WHAT IS KNOWN ABOUT THE TOPIC

- Cameroonian are aware of COVID-19, its transmission, and preventive measures
- The perception of Cameroonian about COVID-19; majority think Coronavirus originated from animals while a non-negligible part think it is man-made
- The WHO preventive measures are known and understood by participants of previous studies

WHAT THIS STUDY ADDS

- Awareness of Cameroonian on the governmental preventive measures
- Compliance of Cameroonian in the implementation of government measures and the WHO preventive measures
- Association between knowledge on COVID-19 and practice of preventive measures

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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