



## Knowledge, Attitudes and Practices of the Population in an Urban District Facing COVID-19 in Kisangani, DRC

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### Authors' contributions

This work was carried out in collaboration among all authors. Author IY designed the study, performed the statistical analysis, wrote the protocol, and wrote the first draft of the manuscript. Authors LB, FB, BLE, MK and OB managed the analyses of the study. Authors OB and KT managed the literature searches. All authors read and approved the final manuscript.

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### ABSTRACT

**Objective:** To determine the levels of knowledge, attitudes and practices towards Covid-19 among residents of the Plateau Boyoma neighborhood.

**Methods:** A questionnaire was designed and a cross-sectional survey was carried out among 214 households in the Plateau Boyoma district between September 27 and October 27, 2020. Participants were questioned on knowledge, attitudes and practices towards the COVID-19. The data was analyzed by SPSS.

**Results:** The majority of respondents were males aged 39 to 45 years. Most of the participants had higher education (68.7%). The main sources of information on COVID-19 were radio and television. The majority of respondents had a positive attitude towards complying with government infection control measures, 43.9% said they frequently wash their hands with soap and water, cover their mouth and their skin, respectively nose when coughing or sneezing. However, household concern about COVID-19 is very great. In this study, the surveys had a high level of knowledge about COVID-19 and adapted attitudes towards this disease. However, community health campaigns are necessary to have optimistic attitudes and practice appropriate intervention measures without misconceptions.

*Keywords: COVID-19; boyoma plateau; population; knowledge; attitudes; practices.*

## 1. INTRODUCTION

Coronavirus disease 2019 (COVID-19) is defined as a disease caused by a new coronavirus, now called severe acute respiratory syndrome Coronavirus 2 (SARS-CoV-2; formerly known as 2019-nCoV). Covid-19 is an emerging respiratory infection that was first discovered in December 2019, in Wuhan city, Hubei province, China [1].

In the event of a pandemic such as Covid-19, health authorities need to know the level of public knowledge and attitudes towards Covid-19 [2]. This information is needed to stem the spread of the disease as quickly as possible. It makes it possible to adapt the organization of care and public decisions (such as setting up teleworking, closing schools, canceling public events, etc.) They also aim to reduce, thanks to containment the number of people infected and, with it, to decrease the number of deaths [3].

Covid-19 has spread widely and rapidly, from Wuhan city to other parts of the world, threatening the lives of many. As of January 23, 2020, 581 cases had been confirmed, they were all located in Asia and the United States. Large flows of international travel have gradually shifted the focus of the disease from Asia to Europe, America, and then Africa [4,5]. To date, there are over 2.3 million positive cases of Covid-19 recorded with at least 1.770.695 deaths worldwide [6,7].

The first case of covid-19 in Africa appeared in February 2020 in Egypt. Africa is the second least affected continent ahead of Oceania, with more than 22.160 deaths and 705.016 recoveries for 1.022.084 recorded cases, but the numbers are still increasing. The 54 countries

of the African continent are now affected by the coronavirus, with more than 500.000 cases recorded and more than 10.000 deaths, South Africa is the most affected country on the continent [8].

The Democratic Republic of Congo (DRC) reported its first case of covid-19 on March 10, 2020. As of September 13, 2020, the DRC has recorded 10.390 confirmed cases including 264 deaths and 9.807 recoveries including 19 affected provinces [9].

Currently, almost the entire extent of the country is affected by the said pandemic, including the province of Tshopo which recorded its first case on June 3, 2020 and which currently has 98 cases [9].

To date, however, few studies have been published in the field of prevention and control of covid-19 in the DRC in general and in Kisangani in particular. It is within this framework that the present study falls under in order to assess the knowledge, attitudes and practices of the population of an urban district of the city of Kisangani on Covid-19 and thus contribute to the improvement of strategies prevention against the Covid-19 pandemic in the Democratic Republic of Congo in general and in particular in the city of Kisangani.

## 2. MATERIALS AND METHODS

### 2.1 Nature of the Study

A community cross-sectional study was conducted in the Plateau Boyoma neighborhood with the aim of assessing the knowledge, attitudes and practices of the community on COVID-19.

## 2.2 Framework and Study Period

This study was carried out in the Plateau Boyoma district, one of the districts of the Makiso commune of the city of Kisangani, from September 27 to October 27, 2020 to determine the knowledge, attitudes and practices of the inhabitants of this district in the face of COVID-19.

## 2.3 Target Study Population

All heads of households in this neighborhood were the source population, and all selected persons who met the eligibility criteria were the study population.

## 2.4 Sampling and Method of Recruitment

A stratified random sampling with two strata was used to constitute our sample. First, we randomly chose 10 Avenues in the Plateau Boyoma District, then 25 households were drawn at random for each Avenue.

The sample size was defined using the formula for calculating the size for a proportion. We have estimated at 50% the proportion of respondents with a high level of knowledge about Covid-19, since this value is not known in the DRC or in other African countries with a similar context to ours. So, with a 5% margin of error and 5% precision, our minimum sample size should be 196 people to interview. By taking into account a non-response proportion of 10%, this size was reduced to 214. Since in each household only one person was interviewed (the head of the household or his representative), the number of households visited corresponded to the number of households visited. number of people surveyed.

The study population consisted of residents of the Plateau Boyoma neighborhood, more specifically the heads of households or their respondents (wives). Heads of households who were unwilling to respond and houses closed during data collection were excluded from the study. The variables of interest retained for this study are as follows: sex, age, number of people in the household, knowledge, attitude and practice.

A structured questionnaire was adapted from similar literature, which contains 4 parts. Part I includes basic respondent data and Part II

includes knowledge questions, Part III includes attitude questions, and Part IV includes practice questions. The questionnaire was developed in the French language and data was collected by means of a face-to-face interview method with heads of household or their spouses. The data was entered into an MS Excel spreadsheet and a database was created. The data was exported to SPSS version 24 statistical packages for analysis.

## 3. RESULTS

Social and demographic characteristics of study participants

Table 1 presents the social and demographic characteristics of the study participants.

In total, 214 households were interviewed for a total of 57.0% male and 43.0% female. The majority of respondents (39.3%) were between 35 and 49 years old.

More than half of the sample (68.7%) had a higher level of education and the majority of households (63.6%) consisted of more than 6 people.

### 3.1 Respondents' Knowledge of COVID-19

The Table 2 illustrates the sources of knowledge of those surveyed on COVID-19.

Table 2 shows that all of the respondents (100.0%) declared having heard of coronavirus disease. The main sources of information for the study population remain television (46.3%), followed by radio (24.7%).

In Table 3, we show the knowledge of the respondents on the mode of transmission, the means of prevention and the symptoms of Covid-19.

Direct contact with infected people was the most common source of contamination (88.8%). As for symptoms of the disease, 78.5% of surveys indicate cough as the main symptom of Covid-19.

Regular hand washing with soap and water or with a disinfectant is the means of prevention most cited by respondents (88.3%).

### 3.2 Attitude of Surveys to COVID-19

Table 4 illustrates the risk perception of COVID-19 investigations.

The majority of respondents (65.9%) recognize Covid-19 as a very serious disease and according to them the elderly are most at risk of contracting the disease (81.8%) but people who are affected can cure (94.4%). However 44.4% of respondents do not feel targeted by the disease. Only 55.6% consider they are at risk of contracting Covid-19. If the symptoms of the coronavirus are present, 71.5% of respondents will go to the hospital, 21.5% will remain in quarantine and 5.1% will go to buy drugs at the market. 72.9% will agree to report a loved one with symptoms of Coronavirus disease to the response team. In addition, 82.3% said that preventive measures for Coronavirus disease can stop its transmission in the community.

**Table 1. Social and demographic characteristics of study participants**

Age and gender	Frequency	Percentage
<b>Gender</b>		
Male	122	57.0%
Female	92	43.0%
Total	214	100.0%
<b>Age (years)</b>		
20-34	78	36.4%
35-49	84	39.3%
50-64	40	18.7%
>=65	12	5.6%
Total	214	100.0%
<b>Level of study</b>		
Primary	7	3.3%
Secondary	59	27.6%
Upper	147	68.7%
Any	1	0.4%
Total	214	100.0%
<b>Household size</b>		
<=6	78	36.4%
>6	136	63.6%
Total	214	100.0%

### 3.3 Practice of Respondents Facing COVID-19

Table 5 illustrates measures practiced in the family and measures which are difficult to apply.

The table shows that 93.9% of the people interviewed declared practicing regular hand washing with soap as the main preventive

measure against the coronavirus patient, 43.9% cover their nose and mouth when they cough or sneeze and 27.1% avoid contact with people who have a fever or cough. According to the respondents, certain measures are difficult to apply, in particular: the use of face masks (27.1%), avoiding unnecessary travel (26.6%) and avoiding touching your nose, mouth and eyes with unwashed hands (24.8%). Respondents wanted information on treatment for coronavirus disease (40.7%). They also wanted to know about the existence of the disease in the city, how to protect themselves as well as the mode of transmission of COVID-19.

## 4. DISCUSSION

The emergence of Covid-19 from the city of Wuhan, China, in December 2019, and its rapid global spread to more than 215 countries and territories, has become one of the biggest pandemics in recent times with several challenges of devastating and significant public health [1]. The only difficulty we have encountered is the refusal and unavailability of certain heads of households to participate in this study.

### 4.1 Social and Demographic Characteristics of the Respondents

The majority of the respondents were men aged 20 to 34. Several previous studies conducted in Asia and Africa have found similar results [4,10-14]. This could be linked in part to high exposure to information provided by the media, and to the awareness the media has made since the spread of the virus. The differences in measurement and scoring systems do not allow precise comparisons of knowledge levels between these studies. This may be due to the characteristics of the sample, as the majority of respondents to this study (39.3%) had higher education and aged 35-49 years. It may also be due to the distribution of the questionnaire, amid the Covid-19 outbreak. During this time, people may have gained awareness and knowledge about the disease and its transmission, through television, news and media platforms, to protect themselves and their families [10].

### 4.2 Knowledge of COVID-19 Respondents

Television (46.3%) and radio (24.7%) are the main sources of information on Covid-19. This is consistent with other findings from a study conducted in Kinshasa which also reported

television and radio as the main sources [15]. As of the WHO declaration on Covid-19 as a pandemic, several guidelines and information (TV and radio broadcasts) on Covid-19 have

been established. Access to this reliable information could help dispel the pandemic of disinformation, misconception and ignorance among citizens about COVID-19.

**Table 2. Sources of knowledge of COVID-19 respondents**

Source of knowledge of respondents on covid-19	Frequency	Percentage
<b>Have you ever heard of the coronavirus?</b>		
Yes	214	100.0%
No	0	0.0%
Total	214	100.0%
<b>Where did you first hear about the coronavirus?</b>		
On the television	99	46.3%
On the radio	53	24.7%
In social media	24	11.2%
From a family member	19	8.9%
From a friend	10	4.6%
From a community relay	4	1.9%
At school	1	0.4%

**Table 3. Knowledge of the respondents on the mode of transmission, the means of prevention and the symptoms of COVID-19**

The mode of transmission, the means of prevention and the symptoms of COVID-19	Frequency	Percentage
<b>How do you think you can catch the disease?</b>		
Contact with infected animals	37	17.3%
Direct contact with infected people	190	88.8%
Direct contact with contaminated objects or surfaces	51	23.8%
Through the ambient air	68	31.8%
Sex	11	5.1%
Do not know	4	1.9%
<b>What are the means of prevention against Covid-19?</b>		
Wash your hands regularly with soap and water or with disinfectant	189	88.3%
The use of face masks	125	58.4%
Covering your mouth and nose when you cough or sneeze	90	42.1%
Avoid touching your nose, mouth, eyes with unwashed hands	83	39.8%
Avoid close contact with anyone who has a fever and cough	78	36.4%
Avoid unnecessary travel (stay at home)	73	34.1%
Avoid direct unprotected contact with live animals and animal contact surfaces.	9	4.2%
Drink only treated water	8	3.7%
<b>What are the main symptoms of Covid-19?</b>		
Cough	168	78.5%
Fever	151	70.6%
Breathing difficulties	118	55.1%
Pain in the throat	67	31.3%
Headache	56	26.1%
Shortness of breath	31	14.5%
Muscles aches	14	6.5%
Do not know	7	3.3%

The routes of transmission, the means of prevention and the symptoms of Covid-19 are well recognized by the respondents. In addition, 65.9% know that coronavirus disease is a serious illness and 81.8% of respondents believe that the elderly are most at risk of being infected with the Covid-19 virus. Our results on

respondents' knowledge of the transmission, prevention and symptoms of Covid-19 are consistent with the findings of Saqlain and al. [12] and Giao and al. [11] who reported good knowledge (93.2% and 89.51%) of participants regarding the transmission and symptoms of COVID-19.

**Table 4. Perception of the risk of COVID-19 investigations**

<b>Risk perception</b>	<b>Frequency</b>	<b>Percentage</b>
<b>Do you think coronavirus is serious illness ?</b>		
Not at all serious	7	3.3%
Not very serious	8	3.7%
Serious	54	25.2%
Very serious	141	65.9%
Do not know	4	1.9%
<b>Who do you think is most at risk of contracting the coronavirus ?</b>		
The elderly	175	81.8%
Adults	68	31.8%
Youth	32	15%
Nursing staff	47	22%
<b>Do you think Coronavirus disease is curable?</b>		
Yes	202	94.4%
No	12	5.6%
<b>Do you think you can catch Coronavirus disease?</b>		
Yes	119	55.6%
No	95	44.4%
<b>What will you do if you or a family member becomes ill with the novel coronavirus?</b>		
I'll go to the hospital	153	71.5%
I'll remain in quarantine	46	21.5%
I'll go to buy drugs at the market	11	5.1%
I'll go to see the neighborhood nurse	1	0.5%
No answer	3	1.4%
<b>Would you be willing to report someone close to you with symptoms of Coronavirus disease to the response team?</b>		
Yes	156	72.9%
No	32	15%
Do not know	26	12.1%
<b>Do you think Coronavirus disease prevention measures can stop disease transmission in the community?</b>		
Yes	176	82.3%
No	24	11.2%
Do not know	14	6.5%

**4.3 Attitudes of Respondents to COVID-19**

Regarding risk perception, the minority (3.3%) said the coronavirus was not dangerous because no case had been declared and / or identified in their neighborhood. But 65.5% see it as a threat. They mostly described the coronavirus as a curable disease but one which is dangerous and can kill if there is not good management as was similarly reported in a study carried out among

respondents of non-Hubei district in China [10]. However, if someone close to them shows symptoms of the coronavirus the majority of respondents will take him or her to the hospital or dispensary or report it to the response team. Thus, we see that the respondents intend to change their usual practices if someone shows symptoms of the Coronavirus. This is not the case in a study conducted in Cameroon, where 80% of respondents said they will pray or go to a traditional healer, or make herbal medicines [16]

**Table 5. Measures practiced in the family and measures difficult to apply**

<b>Measures practiced in the family and measures difficult to apply</b>	<b>Frequency</b>	<b>Percentage</b>
<b>What preventative measures are you and your family finally taking to fight the coronavirus?</b>		
Wash your hands regularly with soap and water or with disinfectant	201	93.9%
Covering your mouth and nose when coughing or sneezing	94	43.9%
Avoid close contact with anyone who has a fever and cough	58	27.1%
Avoid direct unprotected contact with live animals and animal contact surfaces	24	11.2%
Eliminate stagnant water	3	1.4%
Not action yet	7	3.3%
<b>What prevention measures are difficult to apply?</b>		
Wash your hands regularly with soap and water or with disinfectant	41	19.2%
Avoid close contact with anyone who has a fever and cough	29	13.6%
Covering your mouth and nose when you cough or sneeze	31	14.5%
Drink only treated water	20	9.3%
Avoid direct unprotected contact with live animals and animal contact surfaces.	7	3.3%
Avoid touching your nose, mouth, eyes with unwashed hands	53	24.8%
Avoid unnecessary travel (stay at home)	57	26.6%
The use of face masks	58	27.1%
Any	61	28.5%
<b>Do you know anyone who is infected with or died from the coronavirus?</b>		
Yes	24	11.2%
No	190	88.8%
<b>What more do you want to know about the disease?</b>		
How can you protect yourself from illness?	38	17.8%
Symptoms of the novel coronavirus disease	19	8.9%
How to treat it	87	40.7%
Does the disease really exist?	54	25.2%
How it is transmitted	23	10.7%
What to do if you have the symptoms	21	9.8%
Most at risk groups	15	7.0%
No answer	60	28.3%

**4.4 Practices of Respondents Facing COVID-19**

The majority of respondents to this study are said to have taken various precautionary measures, including improving hand hygiene and using a face mask during the lock-out period. This generally indicates the optimism and willingness of the people of this neighborhood to effect attitude and behavior changes in the fight against the Covid-19 pandemic. However, some have noted that the use of face masks (27.1%), physical distancing (26.6%) as well as avoiding touching your nose and mouth (24.8%) as difficult measures to apply.

In the groups where the majority replied that the practice of handwashing has changed since the start of the crisis, there are those who replied that this is not the case and deplored the

inadequacy of handwashing kits. hands / soap dispensing. These results are similar with those of another study conducted among the population of the Far North of Cameroon [17].

Over the past five months, Covid-19 has become a major global public health challenge. Identifying national, sub-national or community levels of KAP towards Covid-19 will allow the rapid identification and adequate design of cost-effective and viable public health campaigns. This study reveals the need for intensified and comprehensive health education programs focused on disseminating consistent and harmonized information to the public.

**5. CONCLUSION**

This study shows that Covid-19 is well known by the population of the Plateau Boyoma neighborhood, as are their attitudes and practices

in the face of this disease. Particular emphasis must be placed on information, health education and communication activities to reduce morbidity and mortality linked to COVID-19.

### CONSENT AND ETHICAL APPROVALS

Prior to the administration of the questionnaire, we sought informed consent from the person to be investigated after a brief explanation of the study objectives. All selected subjects were informed that participation in the study was voluntary, that they could stop the interview at any time and that they were not required to answer all questions.

The confidentiality of the respondent was guaranteed because no personal information that could link the respondent to their data was collected. There was no direct benefit from participating in the study but the results of the study will allow the government of the DRC to put in place interventions based on scientific evidence to cut the chain of transmission of the epidemic.

### COMPETING INTERESTS

Authors have declared that no competing interests exist.

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