

Knowledge, attitudes, and practices toward COVID-19 among the general population: a cross-sectional study in Kankan, Guinea

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Abstract

Background. Implementing decisive and effective infection prevention and control measures necessitates a thorough grasp of the general population's level of knowledge in order to identify existing gaps and react appropriately.

Objective. The goal of this cross-sectional research was to assess public knowledge, attitudes, and practices (KAP) about COVID-19 in Kankan Guinea, in order to better understand the socio-demographic factors that are associated with poor KAP.

Materials and Methods. The study population consists of 1230 people who reside in five health districts in the Kankan region. An anonymous paper-based questionnaire, given face-to-face by trained field agents, was used to gather data.

Results. The research included 1230 Guineans in total. The bulk of respondents (60%) were familiar with COVID-19. Only 44% of respondents under the age of 29 had a clear understanding of COVID-19. Male participants knew more about COVID-19 than female ones ($P=0.003$). The majority of participants (82%) had negative attitudes toward COVID-19, while 61% reported positive practices linked to COVID-19 measures. In this research, being female was a risk factor for poor knowledge of COVID-19 ($P<0.001$), and being single was a risk factor for negative attitudes toward COVID-19 ($P=0.009$).

Conclusion. Appropriate measures should be taken to increase public awareness and improve general practice of preventive measures aimed at reducing the spread of infectious diseases such as COVID-19.

Introduction

Ever since COVID-19 was declared a worldwide pandemic by the World Health Organization (WHO), it has continued to place enormous pressure on national health systems and economies.¹ Additionally, the world faces the emergence of several variants,² some of which appear to be resistant to the existing COVID-19 vaccines. COVID-19 is caused by SARS-CoV-2, which belongs to the family *Coronaviridae*. SARS-CoV-2 has zoonotic origins and is transmitted through the interaction between animals and humans.³ The main mode of transmission of SARS-CoV-2 is through direct, indirect or close contact with the saliva or the respiratory droplets of infected individuals.⁴

In the Republic of Guinea, the first confirmed cases of

COVID-19 were reported on March 20, 2020, in the capital Conakry. Several measures were put in place by Guinean authorities to curtail the spread of the virus, such as declaring a state of emergency, closing educational institutions, enforcing physical distancing, and the use of personal Non-Pharmaceutical Interventions such as wearing masks. These strict measures have led to psychosocial consequences such as stress and worry in the Guinean population.⁵ As of March 20, 2022, there are 36,459 confirmed cases and 440 deaths in Guinea.⁶ In the Kankan region, the number of confirmed cases has reached 203, as of March 2021. Fully vaccinated individuals account for 18.8% of the Guinean population.⁷

Experience with previous SARS outbreaks shows that knowledge and attitudes are associated with fear and panic among the public, which may weaken attempts to curtail the spread of infectious diseases.⁸ Therefore, implementing decisive and effective infection prevention and control measures requires a good understanding of the state of knowledge among the general population, in order to identify existing gaps and respond adequately. To date, only one study assessed the knowledge, attitudes and practices (KAP) related to COVID-19 in the Guinean population.⁹

However, no previous studies have attempted to identify factors associated with these KAP in this population. Therefore, the aim of this study is to assess KAP related to COVID-19 among the public in Kankan Guinea, with a view to understanding socio-demographic factors that are associated with poor KAP.

Materials and Methods

Ethical considerations

This study was approved by the Regional Health Research Ethics Committee (RCHR) of Kankan (Guinea Konakry) under the reference number (N°001/CRERS/22). Participation in this study was not compensated and informed oral consent was obtained from all participants prior to the study.

Study design

This analytical cross-sectional study was conducted among individuals living in the Kankan region in the Republic of Guinea. This region is located in one of the border points between the Forest Region and Guinea. The Kankan region is divided into five provinces, four of which are mining sites (Kouroussa, Mandiana, Kerouané and Siguiri). This region is also characterized by high population density and a high migratory flow. Given the dynamics of the spread of COVID-19, we assume that the risk of the spread of the virus is higher in regions with the greater migratory flow. Additionally, the vaccine uptake in this region is only 0.6% despite widespread availability.¹⁰

Study population

The study population is comprised of 1230 individuals who live in five health districts in the Kankan region. About 20% of the country's population lives in Kankan, that is 2,335,937 inhabitants as of 2020. Stratified sampling was applied to the different categories of the target population in our study, making a total of 5 strata. A purposive selection of 3 to 5 individuals was randomly conducted from the 100 randomly selected households in each sampling stratum according to age, gender, education, occupation, and place of residence. The size of each sample was increased by 10% to account for non-response proportions.

Data collection

Data were collected using an anonymous paper-based questionnaire which was administered face-to-face by field agents that were trained in data collection tools and protocol prior to the study.

The questionnaire was created based on similar studies.¹⁰ The survey comprised four main sections. The first section collected information on participants' socio-demographic characteristics (age, sex, marital status, level of education, and profession). The second section evaluated the knowledge of respondents about COVID-19. This section included eight questions about the transmission routes, symptoms, treatment, at-risk groups, prevention, control and isolation. The third section assessed the attitudes of participants toward COVID-19 measures. It included five questions about recovery, symptoms, prevention measures and vaccines. The fourth section evaluated the practices of COVID-19 preventive measures among participants (physical distancing, mask-wearing, and quarantine). A score of 1 was assigned to correct answers and a score of 0 to incorrect answers. The maximum scores for knowledge, attitudes and practices were eight, four, and five, respectively. A cut-off percentage of 75% was used to define good knowledge, positive attitudes and correct practices.

Data analysis

Data analysis was performed using SPSS software version 20. The qualitative variables were presented in numbers and proportions, while the quantitative variables were presented in means and standard deviations. The chi-2 test was used to compare the qualitative variables. Multivariate logistic regression was conducted to identify factors associated with poor knowledge, attitudes, and practices among participants. The significance level was set at 0.05.

Results

Socio-demographic characteristics of the study population

In total, 1230 individuals responded to the questionnaire, the participation rate was 82%. The mean age of respondents was 46±14. The majority of participants (63%) were male. Almost all the respondents were married (94.0%) and almost half (48%) had no level of education. Most participants lived in the health districts of Kankan (37%) and Kouroussa (28%) (Table 1).

Knowledge about COVID-19 among participants

The majority of respondents (60%) had good knowledge about COVID-19. However, only 44% of respondents below 29 years old had a good level of knowledge about COVID-19. Male participants had a higher level of knowledge about COVID-19 compared to female participants ($P=0.003$). Respondents with low to no level of education had lower levels of knowledge compared with respondents with higher levels of education ($P=0.007$). Participants with no professional activity had higher levels of good knowledge compared to professionals ($P=0.014$). Participants living in the health district of Mandiana, Siguiri and Kankan had lower levels of knowledge compared to other districts ($P=0.009$) (Table 2).

Attitudes and practices related to COVID-19 among participants

The majority of participants (82%) had negative attitudes toward COVID-19. Single participants had more positive attitudes compared to married participants ($p=0.006$). However, no statisti-

cally significant difference was observed in the attitudes of participants with different levels of education. Overall, 61% of participants had good practices related to COVID-19. However, only 39% of participants with primary education had good practices regarding COVID-19 (Table 2).

Factors associated with inadequate knowledge, attitudes, and practices towards COVID-19

Being female was a risk factor for poor knowledge about COVID-19 ($\beta=2,000$, $P<0,001$) and being single was a risk factor for negative attitudes toward COVID-19 ($\beta: 3,000$, $P=0,009$) among participants. Profession ($\beta=1,500$, $P=0,014$) and place of residence ($OR=1.100$) were identified as risk factors for poor practices related to COVID-19 (Table 3).

Discussion

The aim of this study was to assess the knowledge, attitude, and practices towards COVID-19 in the Kankan region of the Republic of Guinea. The main findings showed good knowledge, attitudes and practices related to COVID-19 among the majority of participants. Younger age, low levels of education and being female were identified as risk factors for poor knowledge and negative attitudes, respectively.

In our study, the majority of respondents reported adopting recommended practices to control the spread of COVID-19. However,

Table 1. Socio-demographic characteristics of the study population.

Variables	N (%)
Age	
Mean (SD)	46±14
≤ 29 years old	141 (11.0)
30-40 years old	371 (30.0)
41-50 years old	293 (24.0)
≥ 51 years old	425 (35.0)
Sex	
Male	768 (63.0)
Female	462 (37.0)
Marital status	
Married	1155 (94.0)
Single	74 (6.0)
Level of education	
None	588 (48.0)
Primary	71 (6.0)
Secondary	348 (28.0)
Tertiary	141 (11.0)
Koranic studies	82 (7.0)
Profession	
Employees/Merchants	603 (49.0)
Farmers/Fishermen	548 (45.0)
None	79 (6.0)
Health districts	
Kankan	455 (37.0)
Kouroussa	340 (28.0)
Kerouané	151 (12.0)
Mandiana	145 (12.0)
Siguiiri	139 (11.0)

Table 2. Knowledge, attitudes and practices related to COVID-19 among study participants, stratified by age, sex, marital status, level of education, profession and district.

Variables	Good knowledge	Poor knowledge	P	Positive attitudes	Negative attitudes	P	Good practices	Poor practices	P
Age n (%)			<0.05			<0.05			0.006
≤29 years old	62 (44.0)	79 (56.0)		16 (12.0)	110 (78.0)		84 (60.0)	57 (40.0)	
30-40 years old	223 (61.0)	148 (39.0)		54 (15.0)	317 (85.0)		237 (64.0)	134 (36.0)	
41-50 years old	176 (61.0)	117 (39.0)		43 (15.0)	250 (85.0)		198 (68.0)	95 (32.0)	
≥51 years old	282 (67.0)	143 (33.0)		97 (23.0)	328 (77.0)		235 (56.0)	190 (44.0)	
Sex n (%)			0.003			<0.001			0.038
Male	523 (68.0)	245 (32.0)		151 (20.0)	617 (80.0)		465 (61.0)	303 (39.0)	
Female	220 (48.0)	242 (52.0)		57 (13.0)	403 (87.0)		289 (63.0)	173 (37.0)	
Marital status n (%)			<0.001			0.006			0.023
Married	700 (61.0)	455 (39.0)		205 (18.0)	950 (82.0)		715 (62.0)	440 (38.0)	
Single	43 (57.0)	32 (43.0)		5 (7.0)	70 (93.0)		39 (52.0)	36 (48.0)	
Level of education n (%)			0.007			0.083			0.002
None	294 (50.0)	294 (50.0)		87 (15.0)	501 (85.0)		339 (58.0)	249 (42.0)	
Primary	38 (54.0)	33 (46.0)		16 (23.0)	55 (77.0)		27 (39.0)	44 (61.0)	
Secondary	264 (76.0)	84 (24.0)		66 (19.0)	282 (81.0)		249 (73.0)	99 (28.0)	
Tertiary	108 (77.0)	33 (48.0)		28 (20.0)	113 (80.0)		87 (62.0)	54 (38.0)	
Koranic studies	39 (48.0)	43 (52.0)		13 (16.0)	69 (84.0)		52 (67.0)	30 (36.0)	
Profession n (%)			0.014			0.055			0.84
Farmer/Fisherman	316 (58.0)	223 (42.0)		21 (27.0)	58 (78.0)		52 (66.0)	27 (34.0)	
Employées	371 (62.0)	332 (38.0)		101 (17.0)	502 (83.0)		377 (60.0)	223 (40.0)	
None	56 (70.0)	23 (29.0)		88 (17.0)	460 (83.0)		325 (60.0)	223 (40.0)	
Health districts			0.009			<0.001			0.060
Kankan	118 (49.0)	194 (50.0)		120 (24.0)	375 (75.0)		321 (65.0)	174 (35.0)	
Kouroussa	217 (61.0)	143 (39.0)		36 (10.0)	324 (90.0)		212 (59.0)	148 (41.0)	
Kerouané	136 (68.0)	64 (32.0)		35 (18.0)	165 (82.0)		115 (58.0)	85 (42.0)	
Mandiana	89 (51.0)	86 (49.0)		19 (10.0)	156 (90.0)		42 (61.0)	69 (39.0)	
Siguiiri	89 (51.0)	86 (49.0)		19 (10.0)	156 (90.0)		4 (61.0)	6 (39.0)	

Table 3. The results of the linear regression.

Variables	Knowledge			Attitudes			Practices		
	P	β	95% CI	P	β	95% CI	P	β	95% CI
Age	<0.001	0.100	0.001-0.000	<0.001	0.003	0.000-1.000	0.014	1.002	1.067-1.000
Sex	<0.001	2.000	1.000-3.087	<0.001	1.000	0.000-1.000	<0.001	0.005	0.800-1.000
Marital status	<0.001	0.000	0.009-0.000	0.009	3.000	1.000-10.00	0.014	1.500	1.000-3.000
Level of education	<0.001	0.004	0.001-0.000	<0.001	0.001	0.001-0.000	0.027	0.002	0.000-0.001
Profession	0.016	1.000	1.000-3.000	<0.001	1.000	2.000-1.000	0.002	1.500	0.800-2.000
Place of residency	0.034	1.000	1.009-1.000	<0.001	0.002	1.000-1.000	0.89	1.100	0.008-1.000
Age	<0.001	0.100	0.001-0.000	<0.002	0.003	0.000-1.000	0.014	1.002	1.067-1.000

high uncertainty was observed regarding the success in controlling the spread of COVID-19. A similar study in Guinea found that the majority of Guineans were supportive of the government's measures, and only a minority expressed distrust and uncertainty.⁹ Contrasting results were reported in Cote d'Ivoire, Tunisia, Uganda, Malaysia and China, where the general public expressed certainty in the effectiveness of interventions aimed at controlling disease transmission.¹¹⁻¹⁵ This calls into question the level of confidence and, therefore, adherence of the Guinean population to the preventive measures imposed by Guinean authorities in this region.

In this study, young people (≤ 29 years old) were less aware of COVID-19 and less compliant with preventive measures ($P=0.001$). Similar results were reported in other countries such as Bangladesh and China,^{15,16} where older age was associated with compliance with preventive measures. In this study, male participants were more knowledgeable about COVID-19 compared to female participants, which is inconsistent with some studies.¹⁷⁻¹⁹ This study also showed that the level of education had a significant influence on respondents' knowledge, attitudes and practices related to COVID-19. This is consistent with the results of similar studies.^{16,20} Another important finding in this study is that occupation was a determining factor for KAP among participants. Our findings suggest that professionals comply less with COVID-19 prevention and control measures and therefore promote the spread of COVID-19 in the population from professional to family settings. Our results are consistent with existing literature.²¹ These findings call for urgent action, particularly in low-resource settings where there is only one "bread-maker" within family households. Non-compliance with non-pharmaceutical interventions in professional settings will also lead to faster viral transmission and workers needing to quarantine, which in turn has a ripple effect on the economy. In this study, the districts of Mandiana and Sergui had poor KAP compared to other districts. Further investigations are needed to understand the determinants of these KAP as well as the root causes of these differences in health-related behaviors.

Finally, this study showed that young age (≤ 29), low level of education, and being female are risk factors for poor knowledge, attitudes, and practices related to COVID-19. This is consistent with the findings of similar studies.¹⁵ The COVID-19 pandemic, like its predecessors, has a strong behavioral component and its containment intimately relies on compliance with preventive measures. Large-scale mass education campaigns and community awareness activities are therefore needed in order to strengthen the levels of knowledge, attitudes and practices among the general public as well as among vulnerable groups. In the face of waning vaccine efficacy and newly emerging variants of concern, the behavioral aspect of infection prevention should be capitalized on, particularly in settings such as Kankan Guinea, where healthcare

provision is characterized by considerable resource constraints.

To the best of our knowledge, this is the first study to assess the knowledge, attitudes and practices related to COVID-19 among Guineans, with a view to identifying factors associated with poor KAP. However, this study has certain limitations. The study questionnaire was adapted to the local context, which means that the results of this study should be generalized with caution. Although the field agents explained the questions within the questionnaire in the local language, participants who had a poor level of French may have had difficulties answering the questions, which may have resulted in information bias. Finally, this study used a limited number of questions to assess the level of knowledge, attitude, and practice. Therefore, further assessments are needed to measure all aspects of KAP towards COVID-19 in the general population.

Conclusions

This study showed a good level of knowledge, positive attitudes and practices related to COVID-19 among Guineans living in the Kankan region. Younger people, females and the least educated were more vulnerable compared to the rest of the population, which calls for targeted interventions to strengthen knowledge, attitudes and practices among these subgroups. It is unclear whether the COVID-19 pandemic will recede in the future; therefore, an appropriate and widespread practice of preventive measures should be safeguarded by raising awareness of the general public and targeting underserved communities, which are disproportionately affected by the consequences of this pandemic.

References

1. Attacks on health care in the context of COVID-19. Available from: <https://www.who.int/news-room/feature-stories/detail/attacks-on-health-care-in-the-context-of-covid-19>
2. Agut H. COVID-19 - The vaccine miracle must include strictness and caution. *Virologie* 2021;25:141-7.
3. Vilcek S. SARS-CoV-2: Zoonotic origin of pandemic coronavirus. *Acta Virologica* 2020;64:281-7.
4. Mehraeen E, Salehi MA, Behnezhad F, et al. Transmission Modes of COVID-19: A Systematic Review. *Infect Disord Drug Targets* 2021;21. Available from: <https://pubmed.ncbi.nlm.nih.gov/33200716/>
5. Touré AA, Camara LM, Magassouba AS, et al. Psychosocial impacts of COVID-19 in the Guinean population. An online cross-sectional survey. *PLOS ONE* 2021. Available from: <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0245751>

6. GitHub - CSSEGISandData/COVID-19: Novel Coronavirus (COVID-19) Cases, provided by JHU CSSE. 2022. Available from: <https://github.com/CSSEGISandData/COVID-19>
7. Coronavirus (COVID-19) Vaccinations - Our World in Data. 2022. Available from: <https://ourworldindata.org/covid-vaccinations>
8. Person B, Sy F, Holton K, et al. Fear and stigma: the epidemic within the SARS outbreak. *Emerg Infect Dis*. 2004;10:358-63. Available from: <https://pubmed.ncbi.nlm.nih.gov/15030713/>
9. IPSOS. Responding to COVID-19: Highlights of a Survey in GUINEA CONAKRY. 2020.
10. Al-Hanawi MK, Angawi K, Alshareef N, et al. Knowledge, Attitude and Practice Toward COVID-19 Among the Public in the Kingdom of Saudi Arabia: A Cross-Sectional Study. *Frontiers in Public Health* 2020;8:217.
11. Zhong BL, Luo W, Li HM, et al. Knowledge, attitudes, and practices towards COVID- 19 among Chinese residents during the rapid rise period of the COVID-19 outbreak: a quick online cross- sectional survey. *Int J Biol Sci* 2020;16:1745.
12. Yapi RB, Hounghbedji CA, N'guessan DKG, et al. Knowledge, attitudes, and practices (Kap) regarding the covid-19 outbreak in côte d'ivoire: Understanding the non-compliance of populations with non-pharmaceutical interventions. *Int J Environ Rese Pub Health* 2021;18:4757. Available from: [/pmc/articles/PMC8124153/](https://pubmed.ncbi.nlm.nih.gov/34208959/)
13. Ketata N, Ayed H ben, Hmida M ben, et al. COVID-19 and medical students: knowledge, attitudes and practices. *Infectious Diseases Now* 2021;51:S62.
14. Kamacooko O, Kitonsa J, Bahemuka UM, et al. Knowledge, Attitudes, and Practices Regarding COVID-19 among Healthcare Workers in Uganda: A Cross-Sectional Survey. *Int J Environ Res Pub Health* 2021;18. Available from: <https://pubmed.ncbi.nlm.nih.gov/34208959/>
15. Ferdous MZ, Islam MS, Sikder MT, et al. Knowledge, attitude, and practice regarding COVID-19 outbreak in Bangladesh: An online-based cross-sectional study. *PLoS One* 2020;15. Available from: <https://pubmed.ncbi.nlm.nih.gov/33035219/>
16. Yue S, Zhang J, Cao M, Chen B. Knowledge, Attitudes and Practices of COVID-19 Among Urban and Rural Residents in China: A Cross-sectional Study. *J Community Health* 2021;46: 286.
17. Geldsetzer P. Use of Rapid Online Surveys to Assess People's Perceptions During Infectious Disease Outbreaks: A Cross-sectional Survey on COVID-19. *J Med Internet Res* 2020;22. Available from: <https://pubmed.ncbi.nlm.nih.gov/32240094/>
18. Gao H, Hu R, Yin L, et al. Knowledge, attitudes and practices of the Chinese public with respect to coronavirus disease (COVID-19): an online cross-sectional survey. *BMC Public Health* 2020;20:1-8. Available from: <https://bmcpublichealth.biomedcentral.com/articles/10.1186/s12889-020-09961-2>
19. Masoud AT, Zaazouee MS, Elsayed SM, et al. KAP-COVID GLOBAL: a multinational survey of the levels and determinants of public knowledge, attitudes and practices towards COVID-19. *BMJ Open* 2021;11. Available from: <https://pubmed.ncbi.nlm.nih.gov/33622949/>
20. Al-Marshoudi S, Al-Balushi H, Al-Wahaibi A, et al. Knowledge, Attitudes, and Practices (KAP) toward the COVID-19 Vaccine in Oman: A Pre-Campaign Cross-Sectional Study. *Vaccines (Basel)* 2021;9. Available from: <https://pubmed.ncbi.nlm.nih.gov/34200001/>
21. Nwagbara UI, Osual EC, Chireshe R, et al. Knowledge, attitude, perception, and preventative practices towards COVID-19 in sub-Saharan Africa: A scoping review. *PLoS One* 2021;16. Available from: <https://pubmed.ncbi.nlm.nih.gov/33872330/>