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Attitude and Practice towards COVID-19 Infection: Prevention and Control in Northwestern Nigeria.

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Abstract

Coronavirus disease 2019 (COVID-19) is caused by severe acute respiratory syndrome, coronavirus 2 (SARS-CoV-2), which the World Health Organization has since declared a pandemic. People's attitudes and practices towards the prevention and control of an outbreak can play a significant role in its control. In this cross-sectional survey about 2228 participants were recruited to assess the attitudes and practices of some urban residents on COVID-19 infection prevention and control measures in the

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Northwestern region of Nigeria between August-November, 2021. Consented respondents were recruited using convenience sampling. Data obtained using questionnaires were analyzed and the Chi-square test was used to determine the relationship between attitude and practice with respect to respondents' demographic variables. On participants' attitude, 82.9% believed that COVID-19 is real, 82.4% complied with recommended burial practices, and 73.6% agreed to not travelling to COVID-19 affected areas. However, 76.7% avoided their family or friend infected with the disease, 47.2% preferred traditional remedies in COVID-19 treatment, and 60.6% believed that COVID-19 was engineered in the laboratory. On transmission, 51.5% believed they could be infected with the disease from animals, or faeces (50.0%). Participants recorded good practice towards persons with COVID-19 signs and symptoms (59.6%), hand washing (81.2%), and type of hand washing (72.5%). Whereas, practices on self-protection and spread prevention, and close contact with an infected person were poor. The study showed a significant relationship between practice and age group, education, and occupation. Attitude and practices of the participant towards COVID-19 prevention and control measures need improvement in the region.

Keywords: COVID-19, Nigeria, Prevention, Control, Northwest

INTRODUCTION

Coronavirus disease 2019 (COVID -19) was declared a pandemic by World Health Organization (WHO) on January 30, 2020 (Gorbalenya *et al*., 2020), and called for united global efforts to avert the fast spread of COVID-19 (WHO, 2020). Severe acute respiratory syndrome coronavirus type 2 (SARS-CoV-2) is the etiologic agent of COVID-19, which is an enveloped β-coronavirus with a genetic sequence identical to that of SARS-CoV-1 (80%) and bat coronavirus RaTG13 (96.2%) (Guo *et al*., 2020). The viral envelope is covered by spike (S) glycoprotein, envelope (E), and membrane (M) proteins. Host cell invasion is facilitated by the S protein (Duan *et al*., 2020), which then binds its target receptor (angiotensin-converting enzyme 2).

Nigerian governments implemented several measures to contain the COVID-19 spread (Andam *et al*., 2020). Community spread is presently ongoing, to block this chain, people's faithfulness to preventive and control procedures is essential, which in turn is dependent on the population's knowledge, attitudes, and practices (KAP) towards the COVID-19 (Ngwewondo *et al*., 2020). The KAP is invaluable to their positive outbreak response to the diseases (Mathatha *et al*., 2018), which translates to individuals concern and can muddle efforts on control, thereby encouraging alternative treatments (Blendon *et al*., 2004). The African pandemic response is grossly weak due to fragile healthcare systems and inadequate surveillance system.

Globally as of May 29, 2022, 531,474,010 confirmed COVID-19 cases with 6,310,620 deaths were reported (Worldometer, 2022). Hence. Northwestern Nigeria had 21,085 confirmed cases with associated 324 mortality, which represent 8.24% and 10% respectively of the Nigerian figures (NCDC, 2022). The COVID-19 high transmissibility and fatality are in its third year (2022), despite advances in science and technology. This period corresponds with lessening of lockdown measures globally, therefore in the absence of lockdowns people's attitudes and practices towards the prevention and control of COVID-19 undoubtedly has a prominent role to play, which forms the basis of the current survey in the most populated region of Nigeria amongst other states (Peace and David, 2019).

MATERIALS AND METHODS

Study design
This cross-sectional study was carried out amongst participants living in metropolitan communities in some states of the Northwestern region of Nigeria, between August and November 2021.

Sample Size
About 2250 questionnaires were distributed across the five states (Adam, 2020) and only 2228 were filled and retrieved. The distribution is based on population size (NPC, 2006) and number of cases of COVID-19 in each state (NCDC, 2022).

Study area
The study was conducted in the metropolitan areas of Northwestern Nigeria, which comprise Jigawa, Kaduna, Kano, Katsina, Kebbi, Sokoto, and Zamfara states. It is the most populous region in Nigeria (Peace and David, 2019). The region is bordered by the Niger Republic to the North, Yobe, and Bauchi states of Northeastern Nigeria form the region's eastern border. Niger state of Northcentral Nigeria flank the southern border, while Niger republic bordered the region to the West. Means of transportation between the region's cities and other West African countries are by road and air. Most of the basic facilities owned by both States and Federal governments are highly concentrated in the metropolis as such majority of the populace live and work in the area.

Participants/communities
Participants of this study were people living in the metropolitan areas of the region. Participation in this study was voluntary. We recruited our participants using convenience sampling.

Data collection
A modified questionnaire adopted from our previous study was used to collect the data (Hamid *et al.*, 2018). However, a pilot test was conducted to validate questions, interpret responses, and ensure their practicability before the administration of the questionnaire. The purpose of the study was explained to each participant and informed consent was obtained. Cronbach's alpha internal consistency coefficient of the questionnaire was 0.78. This reliability result is acceptable for using the questionnaire for data collection. In the questionnaire, demographic information about participants' sex, age, occupation, and education level was asked, while other sections assessed attitude and practice on COVID-19 infection, prevention and control measures. Questions asked were related to perceptions and beliefs regarding COVID-19 infection, prevention and control measures.

Statistical analysis
Statistical package for social sciences (SPSS) version 25 (Chicago, IL, USA) was used for the analysis. Categorical variables were reported as percentages. The Chi-square test was used to explore the relationship between practice and age groups, education levels, and occupations. A p-value of ≤ 0.05 was regarded as **statistically** significant.

RESULTS
The number of the participants according to states; Kaduna 595(26.7%), Kano 609 (27.3%), Kebbi 277 (12.4%), Sokoto 367 (16.7%), and Zamfara 380 (17.1%). Figure 1 depicts sex

distribution, age distribution, educational levels, and occupation distribution of the participants.

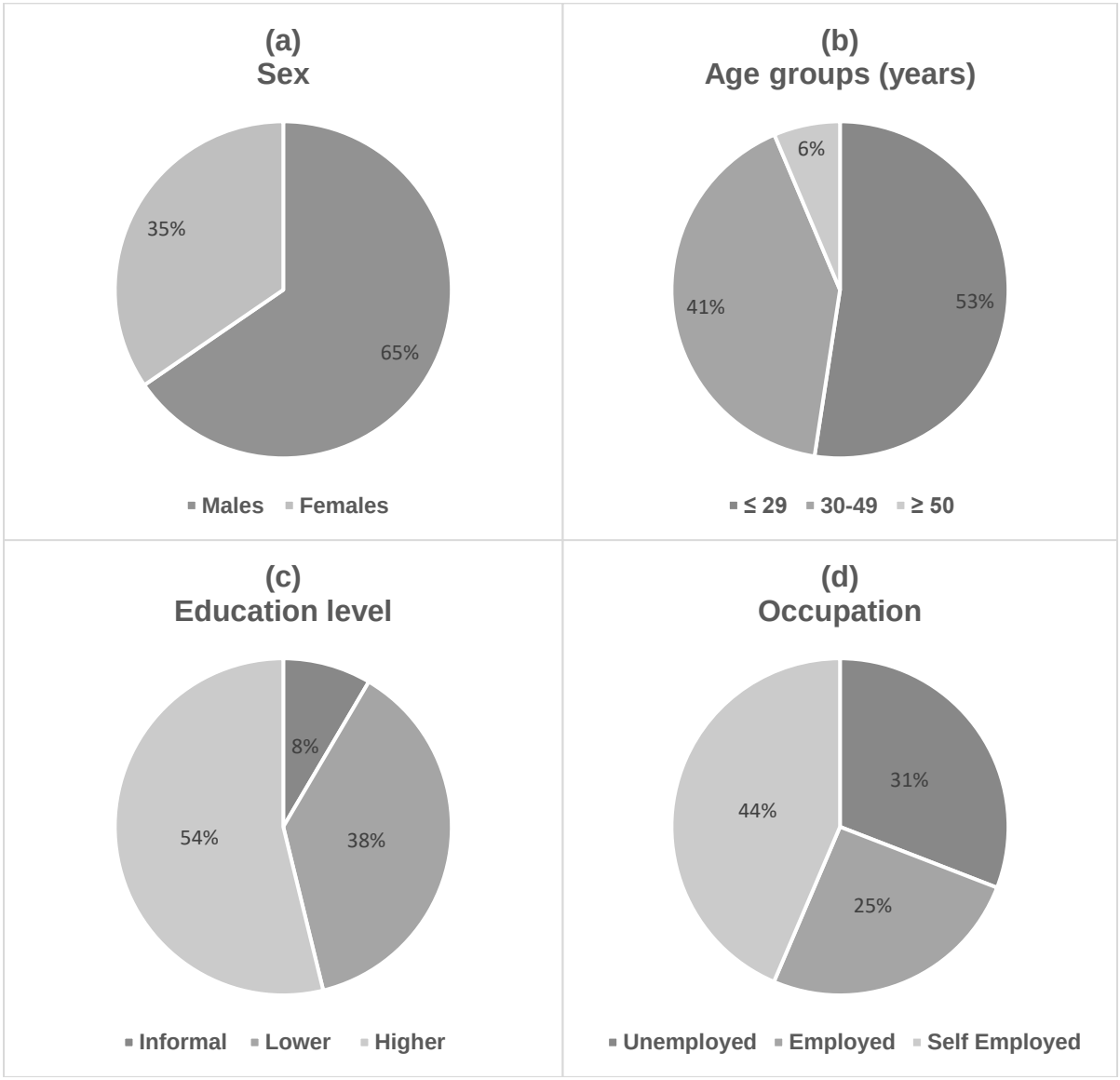

Figure 1: Participants demographic data. Of the 2228 participants, 1458 (65.4%) were males, while 770 (34.6%) were females. (b) The age-group with highest frequency is ≤ 29 with 1168 (52.4%) followed by 30-49 years 918(41%), then ≥ 50 years. (c) 1199(54%) of the participants have higher education (diploma, national certificate of education, first degree, higher national diploma, or master's degree certificates). (d) Most of the participants are self-employed 971(44%), then employed 569(31%) - civil or public servant, while the least are the unemployed 569(25%): students, house wives and the like.

Attitudes towards COVID-19 infection prevention and control measures

As depicted in Figure 2, those participants that strongly disagreed that COVID-19 is real and present in Nigeria have the lowest frequency 174 (7.8%). Only 210 (9.4%) strongly disagreed and 424 (19.0%) disagreed that their occupation would expose them to COVID -19. On being scared of any family member or friend with COVID-19, 142 (6.4%) strongly disagreed, however, 886 (39.8%) agreed, and 889 (39.9%) strongly agreed. On burial practices, 107 (4.8%) strongly disagreed with wearing hand gloves, face masks, and personal protection equipment (PPE) can prevent them from getting infected during the burial of people that have been confirmed to have died of COVID-19. On travelling to affected area, only 155 (7.0%) strongly

disagreed. On preference of traditional remedy, 643 (28.9%) agreed and 407 (18.3 %) strongly agreed. On whether COVID-19 was engineered in Laboratory, 726 (32.6%) agreed and 623 (28.0%) strongly agreed. Only 633 (28.4%) agreed and 447 (20.1%) strongly agreed that they could get infected with COVID-19 from pets or other animals. Only 693 (31.1%) agreed and 422 (18.9%) strongly agreed that they can contract COVID-19 from the feces of someone with the disease.

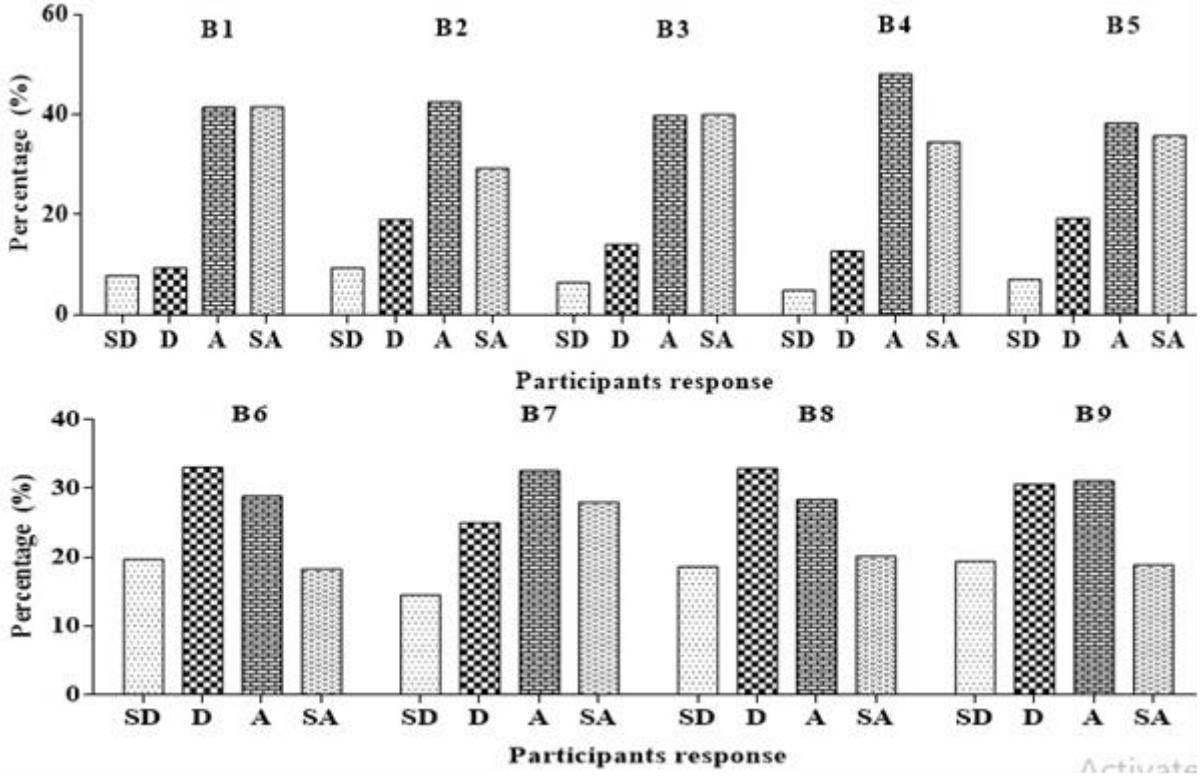

Figure 2: Attitudes towards COVID-19 Infection, Prevention and Control Measures. B1: COVID-19 is real and present in Nigeria. B2: My occupation will make me at risk of COVID-19. B3: Scared of family member or friend affected with COVID-19. B4: Wearing hand gloves, face mask, and PPE during burial practices can prevent COVID-19. B5: Travelling to affected area will lead to COVID-19 infection. B6: Traditional remedy is preferred in COVID-19 treatment B7: COVID-19 was engineered in Laboratory. B8: Contract COVID-19 from pet or other animals. B9: Contract COVID-19 from feces of someone with the disease. PPE: Personnel protective equipment, SD: Strongly disagree, D: Disagree, A: Agree, SA: Strongly agree.

Practices towards COVID-19 Infection, Prevention and Control Measures

From Figure 3, 1329 (59.6%) responded correctly to action taken on a person showing the signs and symptoms of COVID-19. The majority (81.2%) responded correctly on how often they wash their hands per day. On the type or combination of hand washing used to prevent COVID -19 transmission, majority (72.5%) responded correctly. Response on what to do to protect self and prevent COVID-19 spread, only 49.7% responded incorrectly while 40.3% responded correctly. Only, 1309 (58.8%) responded incorrectly on what to do if they come in contact with a COVID-19 patient.

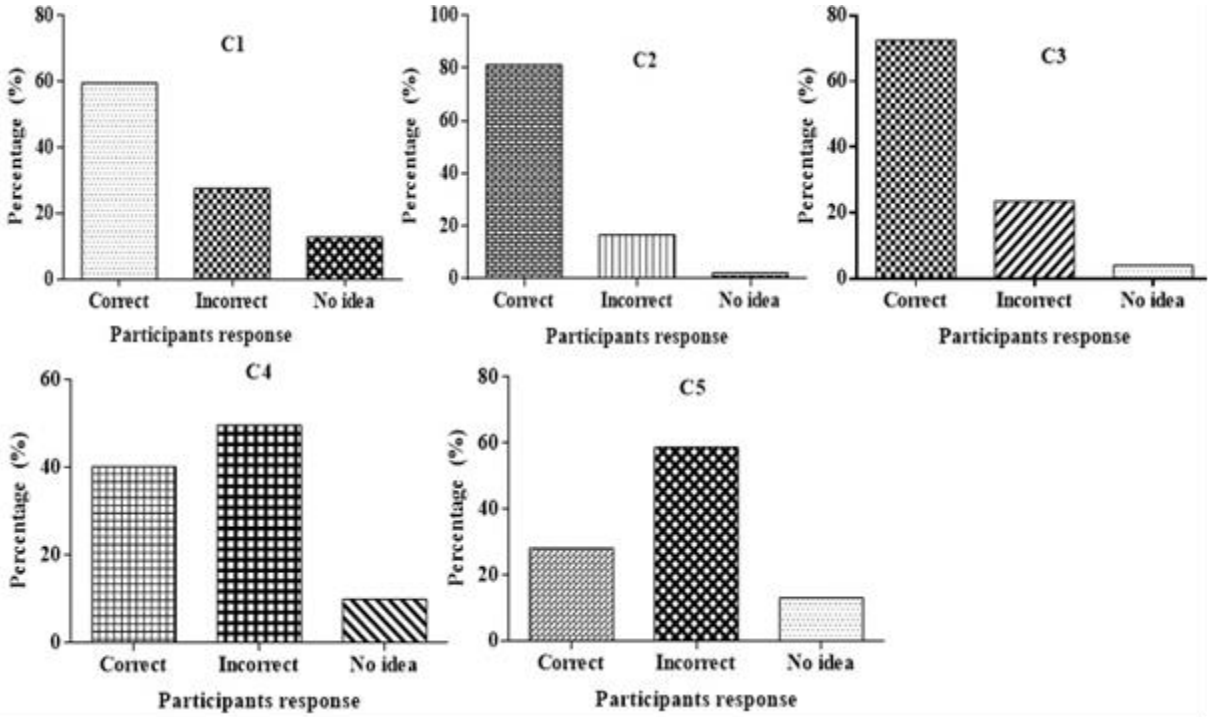

Figure 3: Practices towards COVID-19 Infection, Prevention and Control Measures.
C1: Action taken on person showing the signs and symptoms of COVID-19. C2: How often do you wash hands per day?*, C3: Hand washing use to prevent COVID-19 transmission. C4: What to do to protect self and prevent spread of COVID-19? C5: What to do if come in close contact with COVID-19 patient? *Correct = three time or more, incorrect = once or twice.

Relationship between Age group and practices towards COVID-19 prevention and control
As shown in Table 1, among the age groups that responded correctly, ≤ 29 years had the highest frequency (51.5%) on action taken on individuals showing the signs and symptoms of COVID-19 (p=0.001), 50.4% on hands washing per day (p=0.002), 53.9% on type or combination of hand washing (p=0.06), 50.7% on self-protection and prevent spread of COVID-19 (p<0.0001) and 48.6% on what to do when in contact with COVID-19 patient (p=0.004).

Table 1: Relationship between age group and practices towards COVID-19 infection, prevention and control measures

Questions	Age groups N (%)			Total	p-value
	≤ 29 yrs	30 – 49 yrs	≥ 50 yrs	N	
Action taken on person showing the signs and symptoms of COVID-19	684 (51.5)	552 (41.5)	93 (7.0)	1329	0.001
How often do you wash hands per day?	912 (50.4)	777 (43.0)	120 (6.6)	1809	0.002
Hand washing use to prevent COVID-19 transmission	871 (53.9)	653 (40.4)	92 (5.7)	1616	0.06
What to do to protect self and prevent spread of COVID-19	455 (50.7)	390 (43.5)	52 (5.8)	897	<0.0001
What to do if come in close contact with COVID-19 patient	305 (48.6)	280 (44.6)	43 (6.8)	628	0.004

≤ = less than or equal to, ≥ = greater than or equal to, N= number

Relationship between education level and practices towards COVID-19 prevention and control
As depicted from Table 2, of those responded correctly, participants with higher education had the highest frequency (59.5%) on action taken on person showing the signs and symptoms of COVID -19 (p=0.001), 54.1% on hands washing per day (p=0.031), 58.4% on type of hand

washing (p<0.0001), 61.4% on self- protection and prevent spread of COVID -19 (p<0.0001) and 64.8% on what to do when in contact with COVID-19 patient (p<0.0001).

Table 2: Relationship between education level and practices towards COVID-19 infection, prevention and control measures

Questions	Education Level N (%)			Total N	p-value
	Informal	Lower	Higher		
Action taken on person showing the signs and symptoms of COVID-19	90 (6.8)	448 (33.7)	791 (59.5)	1329	<0.0001
How often do you wash hands per day?	140 (7.7)	691 (38.2)	978 (54.1)	1809	0.031
Hand washing use to prevent COVID-19 transmission	99 (6.1)	573 (35.5)	944 (58.4)	1616	<0.0001
What to do to protect self and prevent spread of COVID-19	32 (3.6)	314 (35.0)	551 (61.4)	897	<0.0001
What to do if come in close contact with COVID-19 patient	17 (2.7)	204 (32.5)	407 (64.8)	628	<0.0001

Relationship between occupation and practices towards COVID-19 prevention and control. It can be observed in Table 3 that amongst the participants who responded correctly, self-employed had the highest frequency (34.8%) on action taken on person showing the signs and symptoms of COVID -19 (p=0.01), 42.8% on hands washing per day (p<0.0001) and 38.5% on the type or combination of hand washing (p<0.01). However, employed participants had the highest frequency (38.5%) on self- protection and COVID -19 spread prevention (p=0.04) and 40.4% on what to do when in close contact with COVID -19 patient (p<0.0001).

Table 3: Relationship between occupation and practices towards COVID-19 infection, prevention and control measures

Questions	Occupation N (%)			Total N	p-value
	Unemployed	Employed	Self-employed		
Action taken on person showing the signs and symptoms of COVID-19	444 (33.4)	422 (31.8)	463 (34.8)	1329	0.01
How often do you wash hands per day?	537 (29.7)	497 (27.5)	775 (42.8)	1809	<0.0001
Hand washing use to prevent COVID-19 transmission	515 (31.9)	479 (29.6)	622 (38.5)	1616	0.01
What to do to protect self and prevent spread of COVID-19	259 (28.9)	321 (35.8)	317 (35.3)	897	0.04
What to do if come in close contact with COVID-19 patient	177 (28.2)	254 (40.4)	197 (31.4)	628	<0.0001

DISCUSSION

This cross-sectional survey was conducted in the Northwestern geopolitical zone of Nigeria. We assessed participants' attitudes towards COVID-19 prevention and control using nine items. The majority of the participants (83%) believed that COVID-19 exists in Nigeria. Most of the participants (60.6%) believed that the SAR-COV-2 was designed in the laboratory, majorly based on infodermics. Several studies (Mousa *et al.*, 2020; Abdelhafiz *et al.*, 2020; Reuben *et al.*, 2021) reported that social media serve as the most common source of information regarding COVID-19. Furthermore, a study from the Northwestern Nigeria indicated social media (49.32%) and radio (43%) as the most common source of COVID-19 information. Also, 36% of their participants believed COVID 19 is man-made (Habib *et al.*, 2021). In this survey, 71.5% of the participants believed that their work can expose them to COVID-19, which serves as an important deterrent. A study conducted by Bandyopadhyay *et al.*, (2020), reported high exposure to the disease and mortality in Europe and America among

health workers, while in Nigeria about 800 health workers were exposed (Tih, 2020). This is clearly in-line with global distribution of COVID-19 (Worldometer, 2022).

This current study indicated that the majority of the participants displayed positive attitudes, regarding the aseptic burial of COVID-19 corpses (82.4%) and quarantine (73.9%); a credit to the government and non-governmental health education to communities. Similarly, a study from Uganda reported a 72.4% positive attitude toward COVID-19 (Ssebuufu *et al*., 2020). A significant number of the participants (47.2%) preferred traditional medication for COVID-19 to orthodox therapy. People readily use herbal medicine for treatment of disease conditions, COVID-19 inclusive (Yang *et al*., 2020; Chan *et al*., 2020). Several studies reported a significant role of herbal medicine in COVID-19 treatment (Wu *et al*., 2020; Qi *et al*., 2020; Zhan *et al*., 2020). Besides, adjuvanted therapy could be more effective (Ang *et al*., 2020).

Participants were equally divided as to whether the COVID-19 can be transmitted through a fecal-oral route, even though, no data confirmed such transmission. The transmission of COVID-19 is by direct contact with an infected person (Duan *et al*., 2020; Ngwewondo *et al*., 2020) or indirectly via SARS-CoV-2 contamination (Habib *et al*., 2021). Still, 51.5% believed COVID-19 to be zoonotic. In the absence of an animal reservoir, COVID-19 can only be classified as an emerging infectious disease with human spill over (Haider *et al*., 2020).

Most of the participants (79.7%) are scared of COVID-19 infected family and friends, which can result in stigmatization. Stigmatization promotes social isolation and depression (Bhanot *et al*., 2021), thereby confounding control and preventive measures against COVID-19 (UNICEF, 2020). The participants responded positively to hand washing (81.2%) and hand washing type for disease prevention (72.5%). However, it is alarming to note that only 59.6% will employ the correct practice for individuals with clinical signs and symptoms of the COVID-19, this may be attributed to infodermics and poor health education, hence more health education is needed. Several studies reported good practices in preventive and control measures toward the pandemic (Olum *et al*., 2020; Asemahagn, 2020; Tesfaye *et al*., 2020; Anikwe *et al*., 2020; Mbachu *et al*., 2020; Okoro *et al*., 2022). But, a large proportion of the participants displayed poor practice in self-protection and spread prevention (49.7%), also close contact with an infected person (58.8%). Our data was different from the aforementioned studies based on the fact that those studies were conducted among health care workers, who have better perception of the pandemic than our participants that are city dwellers.

This study showed a significant relationship between age group and practice. Our participants that are 29 years of age or younger have the highest positive practices regarding COVID-19 patients (51.5%) as well as hand washing practices (50.4). However, participants with ≤ 29 years reported the poorest response to self-protection and appropriate measure when they had established contact with COVID-19 patients.

In this study, education level can be associated with better practices towards prevention and control of COVID-19, as participants with higher education responded correctly on what to do to persons showing signs and symptoms of COVID-19, hand washing, self-protection, and spread prevention. Conversely, the participants with non-formal education recorded poor preventive practices, which can increase their risk of COVID-19 infection. The results recorded in this study are in agreement with those reported in Ethiopia (Adhena and Hidru, 2020; Akalu *et al*., 2020) and Iran (Erfani *et al*., 2020). Which are both developing countries like Nigeria.

Our survey indicated a good relationship between the occupation and practices towards prevention and control measures against COVID-19. In which self-employed participants significantly responded correctly to preventive practices for COVID-19 patients (p=0.01), handwashing (p=0.0001), and the type of hand wash (p=0.01) used to prevent transmission of the COVID-19. However, on self-protection and prevention of disease spread, also contact with COVID-19 patients self-employed harbored poor practices.

People need to be educated on positives and negatives of pandemic and their repercussions. Hence, poor education and distorted information are the main players downplaying proper attitudes and good practices towards COVID-19 in sub-Saharan African countries (Nwagbara *et al.*, 2021).

CONCLUSION

The majority of the participants have bad attitudes towards COVID-19 regarding its existence in Nigeria, aseptic burial of COVID-19 corpses, and quarantine issues. While many of the participants expressed negative attitudes toward infected close contact, the origin of the virus, and COVID-19 treatments. The participants have bad practice as regards hand washing and hand washing type used for disease prevention**.** However, we reported poor practices on self-protection, spread prevention, and what to do when in close contact with an infected person. The study has shown a significant relationship between practice and age group, educational level and occupation of the participants. However, health education on preventive, and control measures of COVID-19 infection needs improvement in the region.

CONFLICT OF INTEREST:

Authors declare no conflict of interest

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