Socio-Cultural Factors, Attitude and Belief on Compliance to Covid-19 Preventive Measures among Abuja Residents, Nigeria: Pivotal Roleof Health Education

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ABSTRACT

Socio-cultural factors, attitude and belief have been identified as major factors of diseases compliance and are germane to preventing COVID-19 because of their direct influence in the preventive process of COVID-19. There is dearth of data concerning these variables in the spread of COVID-19. This study examined the influence of socio-cultural factors, attitude, and belief in the prevention of COVID-19 in Abuja, Nigeria and the pivotal role of health education in order to ascertain how the listed factors affect compliance of Abuja residents in preventing the spread of the disease. A cross-sectional survey design, and 338 participants selected using snowball sampling technique. A self-structured validated questionnaire (coefficient reliability 8.0) administered electronically for three weeks (June 2020) was used for data collection. Data analyzed using frequency counts, percentages and mean for demographic data. Hypotheses tested using inferential statistics of regression, T-test, ANOVA and Schefft's Post Hoc at 0.05 significance level. Attitude and belief were significant predictors of participants' preventive measures, $F (2, 335) = 6.373$ where $p < 0.05$; indicating that increase in attitude and belief of the participants led to taking more precautionary

measures of COVID-19. Family type of the participants influenced compliance to COVID-19 (T (336) = -3.109 where p < 0.05). Other socio-cultural factors: occupation, education, ethnicity, and income influenced participants' compliance to COVID-19 prevention (p < 0.05). Religion and neighborhood did not influence the participants' compliance to COVID-19 prevention (p > 0.05). Health education is a veritable tool to ameliorate socio-cultural factors influencing compliance to COVID-19 and has a pivotal role to play in preventing the spread of COVID-19. It should be positioned proactively to reduce the impact of the influence of socio-cultural factors on the spread of COVID-19. Similar studies should be carried out in other parts of Nigeria for comparison.

Keywords: COVID – 19; socio-cultural factors; Abuja; compliance; prevention; health education.

INTRODUCTION

The novel coronavirus (COVID-19) identified in Wuhan, China, in December, 2019 is still ravaging the world. It is a novel viral strain, which has not been seen in human beings before now. Person to person spread has been on the increase. The coronavirus disease 2019 (COVID-19) pandemic presents unique challenges to all spheres of life. Like the other viruses that are in coronavirus family, it signs and symptoms which ranges from mild flu-like for example cold, sore throat, cough and fever, to more serious signs like pneumonia and breathing problems, which can ultimately cause death (Cirrincione et. al, 2020). The first COVID-19 case in Nigeria was recorded on the 27th of February, 2020 in Lagos state. It is important to recollect that the first death of a coronavirus patient was recorded by the Nigerian Center for Disease Control after the index case and second positive patient had already been discharged from the isolation centre (NCDC, 2020) Health education crusades for the promotion of cleanliness and social distancing in other to stop or reduce the extent of COVID-19 infection in the country were put in place by Government organizations. Safety precautions such as examination of body temperature the entry points and self-isolation of those coming back from high-risk countries, wearing of nose mask, social distancing which assumes dissociation and using of alcohol-based hand sanitizers were also introduced. (NCDC,

2020; Mansouri, 2020). Mansdorf (2020) observed that obedience to instructions and inculcated procedure is a long-lasting and identified problem in medicine because people often refuse to comply with what is useful for them. With this assertion, people are also expected to exhibit the same attitude as regards COVID-19 pandemic safety measures compliance. The key variables considered in this study are socio-cultural factors, belief, attitude, and compliance in relationship to prevention of COVID-19 and the pivotal role of health education in ameliorating non-compliance to CoVID-19 protocols. These variables go a long way to determine the willingness of individuals to take charge of their health or prevent diseases (Ugwu & Kok, 2015). Socio-cultural factors are major social determinants of health; they are the conditions in which people live, learn, work, and play in. The socio-cultural factors that influence health are many, but this study considered education level, income, religion, ethnicity, family type and neighbourhood. Beliefs and attitudes were also considered as they emanate from social and cultural indices, beliefs and attitudes are related to lifestyle. Beliefs are a fundamental aspect of human cognition that fulfills important individual and social functions. A belief is an idea that a person holds as being true, often considered as a conviction (Dagnall et al, 2019). On the other hand, an attitude refers to a set of emotions, beliefs, and behaviors toward a particular object, person, thing, or event. Attitudes are often the result of experience or upbringing, and they can have a powerful influence over behavior.

Attitudes are enduring and they can also change. (Mäntyselkä et al., 2019). Attitudes and beliefs are germane to keeping healthy. In many studies, beliefs and attitudes are considered along with socio-cultural factors. (Roudsar et al.,2015; Karigi et al.,2016). Compliance is conforming to established guidelines to prevent problems. The factors of compliance to diseases are multifaceted and socio-cultural factors and beliefs have been identified by the researchers as major factors of compliance. So long as lack of compliance to safety measures during the COVID-19 period endangers other people, it signifies an exceedingly high risk to public health and safety (Mansdorf, 2020). These variables were carefully considered to bring out their influence on Abuja residents' compliance to the preventive measures of COVID-19 because of the direct influence and success of these variables in the preventive process of COVID-19. Moreso, this

type of study on COVID-19 is novel in Abuja which is the Federal Capital Territory of Nigeria. The findings in this study may help in strategizing and re-strategizing the prevention of COVID-19 pandemic.

Brief description of study area: Abuja is the capital of Nigeria since December, 1991 and referred as the Federal Capital Territory (FCT). It is located in the north central geopolitical area of Nigeria and has a land area of 8,000 square Kilometers. It is bounded on the north by Kaduna state, on the west by Niger state, on the east and south-east by Nasarawa state and on the south-west by Kogi state. Abuja's 2020 population is estimated at 3,277,740. During the early 2000s, the city's population grew by almost 140%. Today, most areas of the city still see annual growth of 35%, making it one of the fastest-growing cities in the world. The city's population is remarkably diverse. The residents include Ibo, Fulani, Yoruba, Afo, Gwari, Hausa, Koro, and Bassa (World Population, 2020). Generally, the FCT experiences two weather conditions in the year. These are the rainy season which begins around March and runs through October, the dry season (usually characterized by bright sunshine) which begins from October and ends in March. Within these periods, there is a brief period of harmattan occasioned by the northeast trade wind, with a resultant dusty haze and intense coldness and dryness. (The Geography of Abuja, 2020).

Objectives

1. Determine the influence of attitude and belief on COVID-19 preventive measures.
2. Discuss the relationship between socio-cultural factors and compliance to COVID-19 preventive measures.
3. Describe succinctly the pivotal role of health education in promoting compliance to the preventive measures of COVID-19.

Hypotheses:

1. The attitude and belief of Abuja residents will not significantly influence their preventive measures to COVID-19.

2. Socio-cultural factors (family type, occupation, religion, education, ethnicity, neighborhood, income) will not significantly influence Abuja residents' compliance to Covid-19 preventive measures.

Materials and Methods

Population: All Abuja residents.

Predetermined criteria: All adult residents (18 years and above) in the Federal Capital Territory (FCT), Abuja within the lock-down period (March-August 2020) were eligible to take part in the study.

Inclusion Criteria: All adults (males & females) living or working in Abuja during the lockdown period (March- August, 2020).

Exclusion Criteria: Individuals below 18 years of age.

Design: A cross-sectional survey design was used for the study. Questionnaires were sent to participants who reside in Abuja through their emails and mobile phone Whatsapp (Physical contact was not possible because of the lockdown associated with COVID -19 pandemic.

Sampling technique: Snowball sampling technique was used because of the lockdown associated with COVID-19 pandemic. Staff directory from National Open University of Nigeria, Abuja and University of Abuja were used to locate email addresses of participants; the researchers also used different contacts phone numbers from their churches and mosques groups to send questionnaire and asked their contacts to assist in sending to people who made the predetermined criteria. A period of two weeks was given to collect data; portal was closed at the end of two weeks. The filled questionnaires were also received electronically. The questionnaire contained a consent section to be filled by the respondents after which they could take part in the study. In this section, the purpose of the study was explained to the respondents; they were assured of confidentiality and anonymity.

Sample size: A total of 338 residents in Abuja participated in the study.

Instrument: A self-structured validated questionnaire (face validity used) was the instrument for data collection. Reliability was ensured using Cronbach Alpha (coefficient reliability 8.0). The questionnaire could be answered completely within 10 minutes.

Data analysis: Descriptive analysis of frequency counts, percentages and mean was used for the demographic data. The hypotheses were analzed using inferential statistics of Regression, T-test, ANOVA and Scheffa's Post Hoc analysis. All data analyses were performed using Statistical Package for the Social Sciences (SPSS) software, version 22. A value of $P < 0.05$ was considered statistically significant.

Ethical Consideration: The participants filled the consent part of the questionnaire indicating their free will to participate in the study before continuing with further filling of the questionnaire. This section explained the voluntary nature of the study and freedom to decline without cohesion. They were also assured of confidentiality and anonymity in answering the questionnaire.

Results

Table 1: Demographic variables

Age (Years)	**Frequency**	**Percentage (%)**
< 20	9	2.7
20-29	63	18.6
30-39	117	34.6
40-49	92	27.2
50 & above	57	16.9
Total	**338**	**100.0**
Gender	**Frequency**	**Percentage (%)**
Male	150	44.4
Female	188	55.6
Total	**338**	**100.0**
Ethnicity	**Frequency**	**Percentage (%)**
Hausa/Fulani	60	17.8
Igbo	107	31.8
Yoruba	61	18
Others	110	32.5
Total	**338**	**100.0**
Family Type	**Frequency**	**Percentage (%)**
Monogamous	287	84.9
Polygamous	51	15.1

Total	**338**	**100.0**
Religion	**Frequency**	**Percentage (%)**
Christianity	264	78.1
Islam	64	18.9
Traditional	6	1.8
Others	4	1.2
Total	**338**	**100.0**
Occupation	**Frequency**	**Percentage (%)**
Civil servants/ Public servants	178	52.7
Industrialist	2	0.6
Self-employed	66	19.5
Full time religious leaders	7	2.0
NGOs	33	9.8
Traders	3	0.9
Artisans	-	-
Unemployed	23	6.8
Others	26	7.7
Total	**338**	**100.0**
Average Monthly Income	**Frequency**	**Percentage (%)**
< #30,000.00	62	18.3
#30,000.00 - #49,999.00	49	14.5
#50,000.00 - #99,999.00	55	16.3
#100,000.00 - #149,999.00	72	21.3
#150,000.00 - #199,999.00	41	12.1
#200,000.00 & above	59	17.5
Total	**338**	**100.0**
Highest Level of Education	**Frequency**	**Percentage (%)**
Primary	2	0.6
Secondary	7	2.0
Post-Secondary but not up to	83	24.6
Degree	151	44.7
First Degree	63	18.6
Master	32	9.5
PhD/Doctoral	**338**	**100.0**
Total		
Categorization of what best describes your neighbourhood	**Frequency**	**Percentage (%)**
	64	18.9
Rural	197	58.3
Urban	77	22.8
Semi-Urban	**338**	**100.0**
Total		

Table 1 above shows demographic variables of the respondents. In summary, majority of the respondents were below 50 years of **age** (83%) while approximately 17% of them were above 50years of age. The **gender** of the respondents shows that majority of the respondents 188 (55.6%) were females and 150 (44.4%) respondents were males. As

regards **ethnicity,** 107 (31.7%) respondents were Igbo, while 61 (18%) were Yoruba, 60 (17.8%) were Hausa/Fulani and others representing minority ethnic groups were 110 (32.5%). In the case of **family type**, 287 (84.9%) were monogamous while 51 (15.1%) were polygamous. The **religion** of the respondents reveals that majority (264) were Christian, 64 (18.9%) were practicing Islam, while few (6) were traditionalists. The **occupation** of the respondents shows that majority (178) were civil servants, 66 (19.5%) were self-employed, 33 (9.8%) work in NGOs and the least (2) among the category were industrialists. The monthly **income** of the respondents shows that 62 (18.3%) earned less than #30,000.00, 49 (14.5%) earned between #30,000.00 - #49,999.00, 55 (16.3%) respondents earned between #50,000.00 - #99,999.00, 72 (21.3%) earned between #100,000.00 - #149,999.00, 41 (12.1%) respondents earned between #150,000.00 - #199,999.00 and 59 (17.5%) earned #200,000.00 and above. As regards **education** of the respondents, majority (151) of the respondents had first Degree, 83 (24.6%) had post-secondary but not up to Degree, 63 (18.6%) had Master, 32 (9.5%) had PhD/Doctoral Degree, 7 (2.0%) and 2 (0.6%) respondents had secondary and primary education respectively. On categorization of what best describes respondents' **neighbourhood,** majority (197) of the respondents were in urban area, 77 (22.8%) were living in semi-urban and 64 (18.9%) were living in rural area.

Hypotheses

Ho1: The attitude and belief of Abuja residents will not significantly influence their prevention to COVID-19

Table 2: Regression analysis of respondents' attitude and belief to precautionary measures of the spread of COVID-19.

Model Summaryb			
R	**R Square**	**Adjusted R Square**	**Std. Error of the Estimate**
0.191a	0.037	0.031	2.278

a Predictors: (Constant), Attitude, Belief
b Dependent Variable: Prevention

	Sum of Squares	**df**	**Mean Square**	**F**	**Sig.**

Regression	66.128	2	33.064	6.373	0.002
Residual	1737.99	335	5.188		
Total	1804.118	337			

a Dependent Variable: Prevention
b Predictors: (Constant), Attitude, Belief

The result of the analysis in table 2 show that attitude and belief are significant predictors of respondents' preventive measures taken, F (2, 335) = 6.373 where $p < 0.05$. The result equally shows that there is a positive relationship which means that increase in attitude of the respondent leads to taking more of precautionary measures and also increase in belief of the respondents on the existence of COVID-19 will also make them take positive preventive measures to ensure compliance and reduction in spread of the virus through their actions. R square shows that there is a 3.7% increase in preventive measures taken by respondents due to increase in attitude and belief of respondents to COVID-19.

Ho2: Socio-cultural factors (family type, occupation, religion, education, ethnicity, neighborhood, income) will not significantly influence compliance to COVID-19 preventive measures

Table 3: Influence of family type on the level of compliance on COVID-19 preventive measures

family type	**N**	**mean**	**Sd**	**t**	**df**	**sig. (2 tailed)**	**mean difference**	**std. error difference**
monogamous	287	9.15	2.066	-3.109	336	0.002	-0.984	0.316
polygamous	51	10.14	2.173	-3.002	67.063	0.004	-0.984	0.328

The result of the independent t-test sample in table 3 shows that there is a significant difference in the compliance level in the family type of the respondents to COVID-19 infection. t (336) = -3.109 where $p < 0.05$. This implies that monogamous family has a

carefree attitude to the compliance of the precautionary measures prescribed by health officials while there is a higher level of compliance to precautionary measures in a polygamous family.

Table 4: Influence of selected socio-cultural factors on compliance to preventive measures of COVID-19 pandemic

Occupational groups	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	60.565	6	10.094	2.322	0.033
Within Groups	1438.654	331	4.346		
Total	1499.219	337			
Religious groups					
Between Groups	33.06	3	11.02	2.51	0.059
Within Groups	1466.159	334	4.39		
Total	1499.219	337			
Educational groups					
Between Groups	68.247	5	13.649	3.167	0.008
Within Groups	1430.972	332	4.31		
Total	1499.219	337			
Ethnic groups					
Between Groups	45.173	3	15.058	3.459	0.017
Within Groups	1454.046	334	4.353		
Total	1499.219	337			
Neighborhood					
Between Groups	25.188	2	12.594	2.862	0.059
Within Groups	1474.031	335	4.4		
Total	1499.219	337			
Level of income					
Between Groups	75.219	5	15.044	3.507	0.004
Within Groups	1424	332	4.289		
Total	1499.219	337			

From table 4, the result shows that there is a significant difference between **occupational groups** in their compliance to preventive measures to prevent the spread of COVID-19 pandemic $F(6, 331) = 2.322$, where $p < 0.05$. Hence, the null hypothesis is rejected. This implies that some workers in a particular occupational group will comply and obey strictly the measures prescribed by the health officials to stop the spread of COVID-19 virus, possibly because they have better exposure to health-related

conditions which conditioned them to comply more than other groups. The result also shows that there is no significant difference between **religious groups** in their compliance to preventive measure to prevent the spread of COVID-19 pandemic F (3,334) = 2.51, where p > 0.05. Hence, the null hypothesis is not rejected. This implies that belonging to a particular religious group does not guarantee compliance and strict obedience to the measures prescribed by the health officials to stop the spread of COVID-19 virus. There is a significant difference between **educational groups** in their compliance to preventive measure to prevent the spread of COVID-19 pandemic F (5,332) = 3.167, where p < 0.05. Hence, the null hypothesis is rejected. This implies that some groups with high educational qualification will comply and obey strictly to the measures prescribed by the health officials to curtail the spread of COVID-19 virus. Also, there is a significant difference between **ethnic groups** in their compliance to preventive measures of COVID-19 pandemic F (3,334) = 3.459, where p < 0.05. Hence, the null hypothesis is rejected. This implies that belonging to a particular ethnic group does not guarantee compliance and strict obedience to the measures of COVID-19 virus. The analysis shows that there is no significant difference between the **neighborhood** and the respondents' compliance and obedience to preventive measures of COVID-19 pandemic F (2,335) = 2.862, where p > 0.05. Hence, the null hypothesis is accepted. This implies that living in a particular neighborhood does not guarantee compliance and strict obedience to the measures prescribed by the health officials to stop the spread of COVID-19 virus. There is a significant difference between the **income level** of the respondents in compliance to preventive measure to curtail the spread of COVID-19 pandemic. F (5,332) = 3.507, where p < 0.05. Hence, the null hypothesis is rejected. This implies that belonging to a particular income cadre does not guarantee compliance and strict obedience to the measures prescribed to stop the spread of COVID-19 virus.

Table 5: Post Hoc of analysis of occupational groups on compliance to preventive Measures of COVID-19

Compliance

		Subset for alpha = 0.05	
Occupation	N		
		1	2

Full time religious leaders	8	8.75	
Civil servants/public servants	179	9.08	9.08
Other	26	9.23	9.23
Self-employed	66	9.27	9.27
NGOs	33	9.94	9.94
Unemployed	23	10.09	10.09
Traders	3		12
Sig.		0.875	0.075

The result in table 5 shows the compliance level of the respondents from different occupation types differ from each other in their compliance to curtail the spread of COVID-19 pandemic. However, the result shows that traders with mean score 12, have more compliance level to the stipulated rules and regulations prescribed by health officials to curtail the spread of the virus.

Table 6: Post-Hoc analysis of levels of education on their compliance to preventive measures of COVID-19

Compliance		
Highest_level_of_education	N	Subset for alpha = 0.05
		1
Master	63	8.43
PhD/Doctoral	32	9.09
Primary	2	9.5
First degree	151	9.52
Post-Secondary but not up to Degree	83	9.58
Secondary	7	10.14
Sig.		0.718

Table 6 shows the compliance level of the respondents from different levels of education differ from one another in their compliance to curtail the spread of COVID-19 pandemic. However, the result shows that the participants that have secondary school certificate as the highest qualification, with mean score 10.14, have more compliance level to the stipulated rules and regulations prescribed to curtail the spread of the virus.

Table 7: Post-Hoc analysis of ethnic groups on compliance to preventive measures of COVID-19

Ethnicity	N	Subset for alpha = 0.05	
		1	2
Yoruba	61	9.07	
Other	110	9.12	
Igbo	107	9.19	9.19
Hausa/Fulani	60		10.08
Sig.		0.988	0.069

The result in table 7 shows that the compliance level of the respondents from different ethnic groups differ from each other in their compliance to curtail the spread of COVID-19 pandemic. However, the result shows that Hausa/Fulani ethnic group with mean score 10.08, have more compliance level to the stipulated rules and regulations prescribed to curtail the spread of the virus.

Table 8: Post Hoc of the level of income of respondents on compliance to preventive measures of COVID-19

Compliance		
Average Income	N	Subset for alpha = 0.05
		1
200,000 and above	59	8.61
50,000-99,999	55	8.78
150,000-199,999	41	9.37
100,000-149,999	72	9.43
30,000-49,999	49	9.71
Less than 30,000	62	9.9
Sig.		0.062

Table 8 shows that the level of compliance in curtailing the spread of COVID-19 according to the respondents' incomes differ from each other. However, the result shows that respondents who earn less than N30, 000 with mean score 9.9, adhere more to the rules and regulation prescribed by the health officials to curtail the spread of COVID-19 pandemic than those who earn 200,000 and above.

Discussion

The prevention of COVID-19 through immunization is ongoing in Nigeria but yet to be fully accepted by the people and majority do not want to receive the immunization.

Studies are investigating different measures that can help to reduce or prevent the spread of the novel pandemic disease. This study was carried out in the Federal Capital Territory (FCT) Abuja, Nigeria to investigate the possible influence of socio-cultural factor, attitude, and belief to the compliance of the preventive measures of COVID-19 as laid down by the Nigeria Centre for Disease Control (NCDC) (2020) in order to contribute to ways of curtailing the spread of the disease. The study also examined the possible role health education could play in preventing of the spread of the disease.he demographic variables show that three hundred and thirty-eight people participated in the stud. Majority of the participants were youths, males and from diverse ethnic group. Although the Igbos can be said to be the highest distinct ethnic group in the study (see table 1). The presence of youths in this study, can be an advantage because they are more mobile than the older groups and getting their views about COVID-19 may actually give a better insight to the true picture of the influence of the variables under investigation; the compliance to preventive measures of COVID-19. Their presence may also have been influenced by the mode of study applied by the researchers; electronic study which is computer literacy bias. Most youths tend to participate in such studies than older groups because of their advantage in the use of technology. This confirms the study of Reneland-Forsman (2011), where he reported that older people are at risk for exclusion in technological study due to limitation in technology use.

There is need to encourage older people to go for basic computer training so that they can be more computer literate and compliant and find it easy to take part in more digital activities. It is worthy of note that majority of the participants are civil servants whose monthly income can be classified as middle-class category (earning over 100,000 naira monthly). Being civil servants may be also have contributed to the computer literacy of the participants because many government establishments give computer trainings and update to their workers so that they can discharge their duties effectively and be abreast of knowledge. Their salaries being mainly in the middle-class category can help them to relatively provide their needs during the lockdown period. The educational level of the participants shows that they attained high education level; most of them have post-secondary qualifications. This should be an advantage to knowledge and understanding the essence of the preventive measures being put in place to prevent the spread of

COVID-19 infection. Education has been posited to increase knowledge, enhancing a sense of personal control that encourages and enables a healthy lifestyle (Hahn & Truman, 2015). Finally, majority of the participants live in the urban area of Abuja. This is desirable for this study because overcrowding tend to occur in the urban areas than the rural areas. Disease spread is not easy to control in urban areas compared to rural areas (Aliyu & Amadu, 2017). The participants are expected to keep social distancing; it is hoped that they will sincerely disclose how easy or difficult this can be achieved in the urban setting where most of them live in. The first hypothesis examined the influence of the participants' attitude and belief on the prevention of COVID-19. The regression model used showed a positive relationship, which means that increase in attitude of the participants leads to taking more of preventive measures. Also, increase in belief of the respondents on the existence of COVID-19 will make them take positive preventive measures to ensure compliance and reduction in the spread of the virus through their actions. This study confirms the finding of Kato et al. (2016) where they observed that a positive and healthy belief and attitude is the way to prevent illnesses and sustain health. This study has also reaffirmed that attitudes and belief may influence an individual's perception of COVID-19 and prevention. Since it is established that there is a strong relation between attitude and belief of the participants, targeted health education should be focused on the participants' mindset to enhance behaviour change, develop sustain positive and healthy attitude which undoubtedly will ensure better prevention of COVID-19.

The second hypothesis examined the influence of sociocultural factors on the compliance to prevention of COVID-19. Seven socio-cultural variables examined were: family type, occupation, religion, education, ethnicity, neighbourhood and monthly income. The polygamous family type appears to take more caution in the compliance to preventive measures compared to the monogamous family type. This finding is unexpected as one would have thought that the monogamous family is at a better advantage of keeping the rules of prevention to COVID-19 because of the probable smaller sizes that monogamous families are likely to have. The reason for this finding is not quite clear and it is at variance with previous studies where it was reported that polygamous families engender the threat to infections while monogamy could have

evolved because it offered protection against the threat of infection (Arthi & Fenske, 2018). The occupation of the participants influenced how much preventive measures they put in place for COVID-19. The compliance was more noticed among traders, people in non-governmental organizations (NGOs) and self-employed. The probable reason for this may be attributed to the fact that the individuals took their health more seriously and provided what they believed was protective for them. Perhaps, those that work with the government, were waiting for the government to provide protective devices for them and would not spend their money on protective devices. Another possible reason is that the people not working for government are probably more monitored by health officials, so they are more at alert to follow the rules for protection. They perhaps want to prevent anything that will disturb their daily business. The NGOs, traders and self-employed people should be commended for keeping to preventive measures. The influence of religion on compliance to prevention of COVID-19 shows no influence on the compliance to the prevention to COVID-19. This is at variance with the study of Mojahed (2014) where he reported that religion may decrease risky behaviors both directly and indirectly. The educational level of the participants had influence on their compliance to the prevention of COVID-19. Surprisingly, people with just secondary education were more compliant than people with higher education. This again is at variance with some previous studies where higher education contributed more meaningfully to preventive measures of disease (Hahn & Truman, 2015).

It is noteworthy that some studies also reported that there is no rigorous and convincing evidence that education improves compliance with infection control precautions or reduces rates of infection, particularly in the long-term (Ward, 2011). This makes this finding controversial and calls for further study to ascertain the exact position of the influence of education on the compliance to disease prevention, especially COVID-19. Ethnicity influenced compliance level. The Hausa/Fulani group demonstrated the highest compliant level followed by the Igbo community. This finding about the Hausa/Fulani about high compliant level was not expected as it has been observed that this group of people have lower education, cultural beliefs and values that do not engender disease prevention (Fayehun & Omololu, 2011). However, this study positions them as people who care and follow laid down preventive rules of COVID-19. It will be

necessary for other studies to reassess this finding to have a better perspective of the true position. The type of neighbourhood also appeared not to have influence on the compliance of the participants to prevention of COVID-19. This again is unexpected because access to improved sanitation, water supply and an enabling environment support those behaviours that are most successful in preventing further transmission. Chitewere et al. (2017) disclosed that research typically considered the neighborhood insofar as it provided an environment for disease transmission and as a target for disease prevention. Finally, the participants with less than 30,000-naira monthly income appeared to be more compliant to the preventive measures of COVID-19 infection. This is another outcome that is controversial. Scarbrough et al. (2011) indicated that the research they carried out on poverty revealed that lower income is linked to poorer health. The lower an individual's income, the higher the likelihood of disease and premature death. This study revealed that the lower income are more health conscious. On begins to wonder if the respondents were truly sincere with their responses. There is need to carry out further studies to authenticate this finding.

Pivotal Role of Health Education

It is well-known that health education plays a crucial role in the prevention and control of emerging infectious diseases, but how health providers should advise families and parents to obtain health education information is a challenging question. With coronavirus disease 2019 (COVID-19) spreading around the world, Nigeria inclusive, more and more people are using multiple sources for information. It is worthy of note that the general public may lack adequate knowledge about emerging infectious diseases, and this situation may be even worse in special groups, like children, the elderly, travelers, and other vulnerable groups. The importance of health education in curbing the spread of COVID-19 was reported in a study carried out in China where health education programmes improved COVID-19 knowledge among Chinese residents to hold optimistic attitudes and maintain appropriate practices (Qi, Chen, Zhang, 2020). In the past, when there were infectious diseases like severe acute respiratory syndrome (SARS), Middle East respiratory syndrome (MERS), Ebola among others, comprehensive or targeted health education was used to improve awareness, attitude and behaviour change of the people (Song, Tian, Wang, 2003; Gray,

Kurscheid, Mationg, *et al*, 2020). Health education will help to emphasize the need for self-quarantine and practicing the necessary hygienic habits which the people take with levity in addition to the other preventive protocols (mask wearing, social distancing, hand washing/ use of sanitizer). Adhering to these protocols bother much on belief, attitude and some socio-cultural factors. Although there has been some health education and promotion campaigns or programmes in Nigeria, we still need a wide influenced and persistent-actioning campaign to face the outbreak of the novel infectious disease (COVID-19) to make people more compliant with the preventive protocols.

Conclusion

The influence of socio-cultural factors, attitude, and belief on compliance to COVID-19 preventive measures among Abuja residents, Nigeria was examined in this study. Attitude and belief had a positive relationship to the prevention of COVID-19. Increase in positive attitude and belief ensured compliance and reduction in the spread of the virus through their actions. Also, socio-cultural factors of family type, occupation, education, ethnicity, and income had influence on the participants compliance of COVID-19 prevention. On the other hand, socio-cultural factors of religion and neighbourhood had no influence on the participants compliance of COVID-19 prevention. Targeted health education should be given to the community on the influence of socio-cultural factors on COVID-19 to further reduce the spread of the disease. More studies on factors influencing compliance to COVID-19 protocols should be carried out in other parts of Nigeria for comparison. Health education should be positioned as a veritable tool to address the spread of COVID-19. The pivotal role of health education undoubtedly will prevent suffering from the pain of lost lives, health education campaigns should be continuously launched to slow down the spread of COVID-19.

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