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Socioeconomic Status as Predictors of Adherence to COVID-19 Protocols by Market Men and Women in Ogun State, Nigeria

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ABSTRACT

Background: Adherence to COVID-19 protocols is a serious issue in Nigeria and this has been worrisome to public health practitioners, including health educators. Obeying precautionary measures has been a great challenge especially among market men and women, including their customers, which appears to be due to several variables. This study examined the impact of socioeconomic status, including income level, level of education, religious affiliation, gender, family structure, cultural background, and age group of market men and women on adherence to COVID-19 protocols in Ogun State, Nigeria.

Methods: The study adopted descriptive survey research design where structured and validated questionnaire was used as the instrument for data collection. Multi-stage sampling procedure was employed to select the sample for the study from the old Ijebu and Egba components of the State, including Ita-Osu new market in Ijebu-Ode and Oba Lipede Market in Abeokuta were purposively selected for the study. In each of the market, n=250 market men and women were randomly selected using simple random sampling technique to make a total sample of n=500, out of this, n=481 questionnaires were retrieved to make a total of 96.0% rate of return.

Results: The results revealed that socioeconomic factors, including gender, income level, type of business, and family structure significantly predicted adherence to COVID-19 protocols at $P< 0.05$.

Conclusion: It was concluded that market men and women in Ogun State do not significantly adhere to COVID-19 protocols, and the identified socioeconomic factors significantly predicted adherence to the protocols. Recommendation was made to involve health educators at all levels to disseminate health information to promote improved health literacy and carry out interventions considering the aforementioned socioeconomic variables towards improving adherence to the protocols.

Keywords: COVID-19, Pandemic**,** Market Men, Socioeconomic Status, Nigeria

Introduction

The incessant increase in the cases and spread of corona virus all over the world lies most probably on poor adherence to COVID-19 preventive strategies and protocols among the general public taking negligence to its incubation period, mode of transmission, and severity of the effect of the virus in the life of an infected person. According to the epidemiological investigation by Lauer, Grantz, Bi, Jones, Zheng, Meredith, Azman, Reich, and Lessler (2019), the incubation period of this virus ranges between 1 to 14 days, and most severely, within 3-7 days the virus is transmissible in the latency stage.

COVID-19 has no permanent cure according to scientist but can be controlled and managed when reported promptly (Yang, Zheng, Gou , Pu, and Chen et al.; 2020). It is said to be transmitted from an infected person to another with the symptoms similar to that of severe acute respiratory syndrome coronavirus (SARS-CoV), and Middle East respiratory syndrome coronavirus (MERS-CoV) (Donlop, Howe, Li and Allen,2020; Li, You, Wang, Zhou, Qiua, Luo et al, 2020; and Laban and Laban, 2020). The symptoms include common cold, difficulty in breathing and bilateral pulmonary infiltrates, and instant death within 14 days of infection if adequate measures and treatment were not promptly applied. Other symptoms include coughing, sneezing, high temperature/high fever, diarrhea, dry cough, fatigue, depression amongst others (Laban and Laban, 2020, Abdelhafez, Mohammed, Ibrahim, Ziady, Alorabi, Ayyad and Sultan, 2020; Donlop, Howe, Li, and Allen, 2020). Similarly, as reported by O'Conor, Arvanitis, Wismer, Opsasnick, Sanchez, and Muñoz et al.(2019); Laban and Laban (2020), this virus is transmitted through respiratory droplets and can adapt and survive for as long as possible on getting in touch or contact with object like tables or any metal object. More importantly, the virus can travel between 0-1 meter distance through sneezing or coughing from an infected person which can lead to infection of a healthy individual. This is why it is recommended that one should keep a distance of one meter from anyone coughing or sneezing and also wear face mask and apply hand sanitizer regularly to avoid contact with the deadly virus (NCDC, 2020)

Before the pronouncement of the incidence of COVID-19 in Nigeria by World Health Organization (WHO, 2021), more than half of the population of Nigerian especially the poor, the less educated, the agrarian rural dwellers, and petty market men and women believed that COVID-19 is a white man disease and cannot strive or survive in Nigeria because of the hot weather condition (Reuben, Danladi, Saleh and Ejembi, 2020). On 27 February, 2020, the first case of COVID-19 was reported by the Federal Ministry of Health in Lagos State, Nigeria (Nigeria Centre for Disease Control, 2020). In May 2020, markets where essential food items are sold which were hitherto closed, were asked to open so that people can go out between some stipulated periods of time of the day to buy essential needs, hence the marked men and women were at liberty to interact with their customers and each other.. Federal Government of Nigeria began steady relapse of the lockdown in July 2020, but confirmed cases and death from COVID-19 continued to increase by 60 and 33%, respectively, compared to that of April ending 2020 (Farabiyi and Asongu, 2020). On 24 October, 2020, the number of cases rose to 61,930 with total death rate of 1,129 (NCDC, 2020d) and up to now, Nigeria has recorded 258517 cases with 3144 death (WHO, 2022, CDC, 2022).

. Shushtari, et al. (2021) investigated the social determinants of adherence to COVID-19 preventive guidance and found out that there are different patterns of adherence among various communities, that adherence to protocols depends on knowledge, sociodemographic, and behavioural characteristics, living and working conditions, attitude, social support, trust, social norms, psychosocial wellbeing, socioeconomic position, and political context. Older female individuals trust government, perceive COVID-19 as threatening and access information throughout traditional news media are more likely to adhere to

COVID-19 public health guidelines (Moran et al, 2021; Li, Feng, Liao and Pan, 2020). Factors associated with adherence to more preventive measures included older age, higher education, anxiety symptoms, and having sound knowledge of the consequences of the infection (Pengpid et al, 2021). No/low source of income was independently associated with poor adherence to COVID-19 protective protocols (Shewale et al 2021). It is evident that there is dearth of data on the consideration of socioeconomic variables as predictors of adherence to COVID-19 preventive protocols in Nigeria. The need to investigate the phenomenon is imminent to provide indications for research intervention geared towards stemming the spread of the infection.

Methods

The broad objective of this study was to examine the place of socioeconomic status of market men and women as predictor of adherence to COVID-19 protocols in Nigeria. Market men and women were chosen as the population of the study because, right from the time of the lockdown occasioned by the spread of COVID-19 infection, Nigerians were seen freely clustering in the markets- both the sellers and the buyers in spite of the social distancing precautionary rule.. The study investigated the level of adherence to COVID-19 protocols and association between socioeconomic status (income level, level of education, religious affiliation, gender, family structure, cultural background, and age group) and level of adherence by market men and women in Nigeria.

This study adopted descriptive survey research design where structured and validated questionnaire was used as the instrument for data collection. The population consisted of market men and women in major markets across Ogun State. Multi-stage sampling procedure was adopted to select the sample for the study. In the first stage, purposive sampling technique was employed to select the old geopolitical divisions of Ogun State, including Ijebu and Egba divisions from the four existing divisions of Yewa, Egba, Ijebu, and Remo, the reasons for the old division preference was that they were representative of the State. The now Yewa division was formerly Egba-do that have the same sociocultural characteristics with the Egbas and the now Remo was formerly Ijebu-Remi that shared the same sociocultural features with the Ijebus. Thereafter, purposive sampling technique was also used to select the biggest market from each of the selected divisions of the state, for Ijebu, (Ita-Osu new market Ijebu-Ode) and for Egba, (Oba Lipede Market Abeokuta). In each of the markets, 250 market men and women were randomly selected using simple random sampling method to make a total sample of 500 in all. The procedure used involved the categorization of the market based on the items sold into five categories, including farm products, provisions, fish/meat, wears, which were randomly selected using simple random sampling method in each of the selected markets. A self-developed and structured questionnaire entitled ‘Market Men and Women COVID-19 Adherence Response Scale’ (MMWC-19ARS) was used as the data collection instrument.

The questionnaire was divided into two sections. Section A was the demographic scale. Section B was MMWC-19ARS with n=11 question items designed based on the 4-point Likert scale (very often, often, sometimes, and rarely). The instrument items were validated by experts in health promotion and health behavior research and librarianship and practitioner in education research at Olabisi Onabanjo University, Nigeria that considered the technicality of the items, the appropriateness of the terminologies, and the content to meet the research objectives for construct, content, and face validity. The psychometric testing of the instrument (questionnaire) was carried out using a split half on 50 market women in Bodija Market in Oyo State, (which is a state next to Ogun State and the chosen markets were far from Bodija Market to avoid contamination) Nigeria and a Cronbach alpa reliability of 0.88 was reported. With this high index, 500 copies of the questionnaire were administered to 250 market men and women in

each of the selected markets from the study area with the help of eight trained research assistants. Meanwhile, literate market men and women responded to the items unaided, while the non-literate ones were assisted by the research assistants in form of interview guide as face-to-face survey. Out of the 500 questionnaires, only 481 copies were retrieved and found usable which accounted for 96.0% response rate. The data were analyzed by SPSS v21, using simple percentages, Mean, Standard Deviation, and Analysis of Covariance (ANCOVA) which was used to display the interactive effects of each of the variables on adherence to COVID-19 preventive protocols at significance level of 0.05.

Approval for this study was sought from the authority of the market association through the executive Chairman's office in the selected local government areas of Ijebu-Ode Local Government and Abeokuta South Local Government in Ogun State Nigeria. Informed consent form stating the purpose of the study, procedure for the study, anonymous status of the participants was signed by the participants after vivid oral explanation. The trained research assistants were duly informed on how to carry out the data collection procedure with all required courtesy.

Results

Source: Field survey;2020

The results revealed that female (63.6%) dominated the study population because women are more involved in market activities. Most of the study participants aged 40-50 years. This was followed by above 50 years of age and the lowest age group was 29 years or younger as indicated by 7.9% of the total sampled population. In terms of religious affiliation, the majority were Christian while secondary school level of education dominated the study population. Also, about 47.2% of the total population were Yoruba, 8.1% were Hausa, while 44.7% were Ibo. Similarly, 29.9% were involved in farm production, 19.55% were in provisions, 29.9% in fish/meat business, and 6.2% were in clothing, while 6.2% were in other businesses. Consequently, in terms of family structure, majority (46.6%) were from polygamous home, followed by monogamous (28.1%) then by small family of less than 6 (15.6%) and lastly large family of over 6 (9.8%) as shown in Table 1.

Table 1. Demographic characteristics of the study participants (N = 481)

Parameters	Frequency(f)	Percentage (%)
Gender		
Male	175	36.4
Female	306	63.6
Age group		
20-29 years	38	7.9
30-39 years	86	17.9
40-50 years	261	54.3
Above 50 years	96	20.0
Religion		
Christian	272	56.5
Islam	209	43.5
Educational level		
Primary school	90	18.7
Secondary	328	68.2
Higher school	63	13.1
Ethnic group		
Yoruba	227	47.2
Hausa	39	8.1
Ibo	215	44.7
Type of business		
Farm produce	144	29.9
Provisions	94	19.5
Fish/meat	144	29.9
Wears	69	14.3
Others	30	6.2
Family structure		
Polygamous	224	46.6
Monogamous	135	28.1
Small family of less than 6	75	15.6
Large family of over 6	47	9.8
Average monthly income		
Below 10, 000.00	68	14.1
10, 000.00 -30, 000.00	145	30.1
31 000.00 -50, 000.00	146	30.4
51, 000.00 -100, 000.00	84	17.5
above 100, 000	38	7.9

Table 2. Level of adherence to COVID-19 protocols among market men and women in Nigeria

S/N	Statements	Very high	High	Low	Very low	Mean	ST.Dev
1	While at the market I make use of face mask continuously	66 (13.7%)	317 (65.9%)	49 (10.2%)	49 (10.2%)	2.83	.79
2	Anytime I want to sneeze/cough, I make sure I cover my mouth with my elbow	45 (9.4%)	299 (62.2%)	79 (16.4%)	58 (12.1%)	2.69	.80
3	I tell my customers to cover their mouth and noise whenever I wanted to attend to them	27 (5.6%)	318 (66.1%)	97 (20.2%)	39 (8.1%)	2.69	.70
4	Anytime I notice anyone close to me coughing or sneezing I immediately take precautionary measures by moving away	63 (13.1%)	240 (49.9%)	119 (24.7%)	59 (12.3%)	2.63	.86
5	I hesitate touching my eye, nose, and ear at this time	18 (3.7%)	271 (56.3%)	145 (30.1%)	47 (9.8%)	2.54	.72

Table 2. Level of adherence to COVID-19 protocols among market men and women in Nigeria

S/N	Statements	Very high	High	Low	Very low	Mean	ST.Dev
6	I avoid hand shaking and hugging with anyone	27 (5.6%)	231 (48.0%)	166 (34.5%)	57 (11.9%)	2.47	.77
7	I wash my hand before entering the market	18 (3.7%)	211 (43.9%)	204 (42.4%)	48 (10.0%)	2.41	.72
8	When I collect money from customers, or touch any object, I make sure I watch my hand with soup and clean water	27 (5.6%)	211 (43.9%)	127 (26.4%)	116 (24.1%)	2.30	.90
9	I observe social distance with my customers	9 (1.9%)	174 (36.2%)	239 (49.7%)	59 (12.3%)	2.28	.70
10	At intervals while at the market, I wash my hand with soup and also apply hand sanitizer	36 (7.5%)	134 (27.9%)	188 (39.1%)	123 (25.6%)	2.17	.90
11	I provide a container with soap and water where all my customers can use it before buying	36 (7.5%)	95 (19.8%)	165 (34.3%)	185 (38.5%)	1.96	.94
	Criteria mean = 2.50						
	Grand mean = 2.45						

Key: very high=very often; high=often; low=sometimes; very low=rarely

Descriptive statistics showed the level of adherence to COVID-19 protocols among market men and women in Nigeria. It is pointedly revealed in the findings that there was no practice of social distancing which reduces contact and prevent cross infection among the participants. The attitude of not covering mouth when sneezing is a practice that can promote the spread of the virus through droplet and inhalation of air suspended organisms, irregular hand washing, rare provision of hand washing facilities is a great pointer to the fact that the WHO precautionary protocols in preventing the spread of COVID-19 infection is not satisfactorily adhered by the participants, as shown in Table 2.

Table 3. The relationship between socio-economic factors (income, religion, nature of business, and level of education) and level of adherence to COVID-19 preventive precautions

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	14.948	.657		22.734	.000
	Average monthly Income	.704	.122	.174	5.787	.000
	Nature of business	-.256	.109	-.068	-2.348	.019
	Educational level	5.905	.249	.721	23.712	.000
	Religion	-.508	.274	-.055	-1.857	.064
	$R = .777$; $R^2 = .603$; $F = 181.008$; $P < .05$					

a. Dependent variable: level of adherence to COVID-19 preventive precautions

The results showed that the identified socioeconomic factors except religion predicted adherence to the preventive protocols. The items as presented statistically revealed that socioeconomic factors are very important when considering adherence to preventive measures to reduce the incidence of communicable diseases.

Discussion

Descriptive statistics showed the level of adherence to COVID-19 protocols among market men and women in Nigeria. Based on the findings,

it can be concluded that market men and women in Nigeria possess a low level of adherence to COVID-19 protocols (Criteria mean of 2.50), which is higher than the total mean of 2.45. In terms of the individual items, only items 1 to 5 indicated high level of adherence to COVID-19 protocols among market men and women. However, for items 6 to 11, the market men and women possess low level of adherence to COVID-19 protective protocols. The level of adherence to COVID-19 protocols among market men and women is higher based on the statement that states; "While at the market I make use of face mask continuously" (Mean = 2.83), followed by the statement of "Anytime I want to sneeze/cough, I make sure I cover my mouth with my elbow" (Mean = 2.69). In contrary, level of adherence to COVID-19 protocols among market men and women is low based on the statement of "I provide a container with soap and water where all my customers can use it before buying" (Mean = 1.96) followed by the statement of "At intervals while at the market, I used to wash my hand with soup and also apply hand sanitizer" (Mean = 2.17). It is pointedly revealed in the findings that the practice of social distancing which reduces contact and prevent cross infection was not observed among the study participants.. The finding is in line with the studies by Nivette, Ribeaud, Murray et al., Roy, and Folmer et al. (Nivette, Ribeaud, Murray et al, 2020; Roy, 2020; Folmer et al 2020). They reported that the level of adherence to preventive precautions is still low in spite of continuous education.

The socioeconomic variables identified for their association with corona virus disease include income, religion, nature of business, and level of education. The findings revealed that average monthly income of market men and women is a potent contributor to adherence to COVID-19 protocols ($\beta = 0.704$; $t = 5.787$; $p < .05$). Similarly, type of business is another potent contributor to adherence to COVID-19 protocols ($\beta = -0.256$; $t = 2.348$; $p < .05$). In addition, level of education is also a potent contributor to adherence to COVID-19 preventive precautions among market men and women ($\beta = 5.905$; $t = 23.712$; $p < .05$). On the other hand, religious affliation seems not to significantly affect adherence to COVID-19 preventive precautions ($\beta = -0.508$; $t = 1.857$; $p > .05$). Nevertheless, the result of the F-value of 181.008 whose probability is significant at $P< 0.05$ showed that at 5% level of significance, there is enough evidence to proof that socio-economic factors (income, religion, nature of business, and level of education) significantly predicted adherence to COVID-19 protocols in Ogun state as shown in Table 3. On the level of adherence based on the identified independent socioeconomic variables, the income is the most potent because of its implication on the provision of the necessary materials and facilities to support the behavioral change needs for adherence to the protocols. The next potent factor is the type of business which has to do with investment and environment, the manner in which the market is structured. Those in the provision areas are predominantly well educated with relatively better income and consequent upon the aforementioned variables. The participants in this category are better informed and they are many with others in the group of electronics and housewares dealers, followed by the level of education of the participants which is another important variable. Those who are well educated better understood the rationale behind the imposition of the lockdown and the WHO preventive protocols, thus improving their level of understanding and adherence. The finding agrees with previous other studies, including Li Feng, Liao, and Pan (2020) on the related demographic variables, Shushtari et al, (2021) on social variables like income and other socioeconomic positions predicting adherence, Pengpid et al., (2021); Shewale et al., (2021), Missoni, Armocida, and Formenti, (2021), Moran et al., (2021) on the psychosocial.

On the individual variables, the economic status of the participants predominantly predicted the participant's adherence to the WHO COVI-19 preventive protocols. In some cases, funding is

required to provide materials freely. Patel et al., (2020), Raisi-Estabragh et al., (2020), Renzaho, (2020), and Thakur et al., (2020) studied the impact of fund on adherence to protocols. They identified economic factors as one of the main predictors of adherence to COVID-19 preventive protocols.

Economic status plays a significant role in adherence to Corona virus disease prevention protocols as revealed in the findings which are in line with previous studies (Renzako, 2020., Thakur et al, 2020., Raisi-Estabragh, et al, 2020 ., Patel, et al, 2020; Madu, Madu and Jacobowitz, 2019). According to them, income level significantly affected total adherence to antihypertensive Treatment Regimen. Okueso and Oke (2016) also reported that social factors of peer influence, parenting style economic status and sex of the child as independent variables accounted for 55.05 of the total variables (R^2 =0.550, P<0.05).

Level of education was found to predict adherence, which is in line with studies of Rahman, Nakamura, Mahmudul-Hasan, Seino and Mostofa (2020). They found out that, there is a significant association between educational status, marital status, family structure, residence location, and socioeconomic status of the patients in relation to adherence to standard precautionary measures (P < 0.05). Apanga and Kumbeni (2021) and Oyebola, Ezinne, Aderinsola, and Joshua (2021) (Apanga and Kumbeni, 2021; Oyebola, Ezinne, Aderinsola and Joshua, 2021) reported that the educated members of their study participants better adhered to the preventive protocols.

The findings in this study revealed that religion did not predict adherence to protocols which is not in line with the study by Saeed et al. (Saeed et al, 2022). They reported that religion is an important tool in health behavior change intervention. The uniformity in the adherence level irrespective of religious alienation in this study agrees with Tyas and Naibaho (2020) and Gozum et al. (2021) (Tyas and Naibaho, 2020; Gozum et al, 2021). They found out the fact that different religious group must be harmonious to collectively fight the spread of corona virus disease by adhering to the public health instruction as developed by the WHO and other health agencies globally.

The sample used for the study was selected using multi stage sampling method that is prone to contamination at some stages, The procedure used for data collection at the markets was also vulnerable to contamination, since the participants were busy working in their various shops. Some of the participants were not impressed by the government intervention on palliative distribution and some of the participants especially less educated ones were of the opinion that the research team members were government representative hence their cooperation was not 100%. It was only 96.0% of the distributed tools for data collection were good enough for analysis which did not give the 100% of the sampled population for the report. The rate of attrition was high which contributed to the delay in administration of the instrument and poor responses to some of the question items due to the fear of unknown among the poor, less educated members of the participants. The variables in the content of the WHO public health preventive protocols like hand washing, social distancing, use of hand sanitizer, and hand washing were not individually reported in the findings of the study, but only focused on the selected socioeconomic variables. On the ethical approval of the study, the ethical committee could not meet at the commencement of the study as a result of the exigency during the initial pilot survey in 2020.

Conclusion

This study identified several socioeconomic factors that are associated with adherence to the WHO COVID-19 preventive protocols among market men and women in Nigeria. The socioeconomic variables included the income of the participants, religion, gender, religion, nature of business, and level of education. According to the results, measuring adherence to COVID-19 protocols can be a difficult task because several factors relating to socioeconomic variables were investigated among people of different trade and

levels of education and other heterogeneous variables. It was concluded that the health behavior of the participants as it relates to adherence to protocols was poor due to several factors as percentage of the participants taking precautionary measures was relatively low. The findings indicated that most of the factors significantly predicted adherent behavior of the participants except religion. It was believed that intensive use of health education intervention adopting various strategies should be enhanced at all levels to prevent further spread of COVID-19 in Nigeria. The governments at all levels should support citizens, including market women and men in the provision of protective materials, and local government health personnel should be encouraged and sensitized to take awareness campaigns to market places.

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Conflict of interest

The authors declare that there is no conflict of interest.

Authors' contributions

Conceptualization, S. A.O., and F.A.A.; Methodology, S.A.O., and A.O.A.; Formal Analysis, O.B., and SAO.

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