ADHERENCE TO COVID-19 PROTOCOLS: MEDIATING EFFECTS OF DEMOGRAPHIC FACTORS AMONG MARKET MEN AND WOMEN IN OGUN STATE

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Abstract
Adherence to WHO COVID-19 preventive protocols has been a serious issue in Nigeria and this phenomenon is worrisome to public health practitioners including health educators because, from all indications, obeying precautionary measures has been a great challenge especially among market men and women including their customers. This study examined the impact of demographic characteristics of market men and women on adherence to COVID-19 protocols in Ogun State. 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 adopted to select the sample for the study from the old Ijebu and Egba components of the State: Ita-Osu new market Ijebu-Ode and Oba Lipede Market 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 in all, out of this, n=481 questionnaires were retrieved to make a total of 96.0% rate of return. The data collected was analyzed with the aid of SPSS version 21.0 windows using simple percentages, Mean, Standard Deviation, T-test, Analysis of Covariance (ANCOVA), and Analysis of Variance (ANOVA) at 0.05 levels of significance. The major findings of this study were that market men and women in Ogun State possessed low level of adherence to COVID-I9 preventive Protocols. In addition, finding also indicated that there is a significant association between gender, religious affiliation, income level, age, type of business and family structure on the level of adherence to COVID-19 preventive precautions. Based on the above, it is therefore recommended that the health educators should be more involved to disseminate information on curbing further spread of COVID-19 by sufficiently adhering to the preventive protocols in Nigeria.
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Keywords: COVID-19, Pandemic**,** Market Men, Market women, Nigeria

Introduction
There has never been any case of global pandemic in the past decades that can be compared with the case of corona virus disease phenomenon which have shaken the entire world simultaneously leading to the death of several thousands of people across the globe. It was first discovered in Wuhan, China late 2019 (Deguenon, Dougnon, Gnimatin, Hounkpatin, Assogba, Baba-Moussa, and Dougnon, 2020; Holshue, DeBolt, Lindquist, Lofy, and Wiesman et al, 2020). Since the discovery

of the virus in December 2019, it has propagated to over 73 countries in the world in not more than 2 months of its diagnosis and have became the main worldwide peril because it has claimed life of thousands of people all over the continents of the world (Hussain, 2020, and WHO 2020). As at 10th of May 2020, the entire world have recorded over 4.2 million cases of coronavirus infection with over 280 thousand deaths, (Neil, Daniel, Gemma, Natsuko and Kylie *et al;* 2020, NCDC, 2020). 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 severe, within 3-7 days the virus is transmissible in the latency stage.

Before the pronouncement of the incidence of COVID-19 in Nigeria by World Health Organization (WHO), more than half population of Nigerian especially the poor, the less educated, the agrarian rural dwellers and petty market men and women beliefed and even openly professed that COVID-19 is a white man disease and cannot strive or survive in Nigeria because of the hot weather condition and so on (Reuben, Danladi, Saleh and Ejembi, 2020). As a result of the misconception, many of the populace was nonchalant towards adherence to the World Health Organisation's preventive protocols.

Li, Feng, Liao and Pan (2020) assessed internet use, risk awareness, and demographic characteristics associated with engagement in preventive behaviors and testing of cases of COVID-19 in the United States. The study was a cross sectional survey which was conducted online between April 10, 2020, to April 14, 2020, participants' internet use, religious affiliation has drawn attention on the interplay of the infection in Iran, South Korea, Malaysia and in Africa (Al- Rousan and Al-Najjar, 2020; Barmania and Reiss, 2021; Mat, Edinur, Razab and Safuan, 2020; Jaja, Anyanwu and Iwu, 2020; Saeedi, Al-Othman, Rabayaa and Dwaikat, 2022). Also, gender is among many other demographic features relating to adherence to COVID-19 protocols adherence (Moran, et al, 2021; Nivette et al, 2020).The study investigated the level of adherence to WHO COVID-19 preventive protocols predicated by demographic characteristics of market men and women in Ogun State.

Methodology

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: First, purposive sampling techniques was adopted to select the two old geopolitical divisions of Ogun State: Ijebu and Egba. Thereafter, stratified random sampling technique was used to select one big market from each of the divisions of the state Ijebu (Ita-Osu new market Ijebu-Ode) and Egba (Oba Lipede Market Abeokuta). In each of the market, 250 market men and women were randomly

selected using simple random sampling technique by elimination to make a total sample of 500 in all. A structured questionnaire named, 'Market Men and Women COVID-19 Adherence Response Scale' (MMWC-19ARS) was used as the instrument for data collection. The questionnaire was divided into two sections. Section A is the demographic scale. Section B is 'Market Men and Women COVID-19 Adherence Scale' with n=11 question items. The instrument was validated by Experts in health promotion research to consider the technicality of the items, the appropriateness of the terminologies, and the content to meet the research objectives. The reliability testing of the instrument was carried out using a split half on 50 market women at Chief Market in Epe area of Lagos State 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 four (04) research assistants. Meanwhile, literate market men and women responded to the items by themselves while the others were assisted by the research assistants. Out of the 500 questionnaires, only 481 copies were retrieved and found usable which accounted for 96.0% response rate. The data collected was analyzed with the aid of SPSS version 21.0 for windows using simple percentages, Mean, Standard Deviation, T-test, Analysis of Covariance (ANCOVA), and Analysis of Variance (ANOVA) at 0.05 levels of significance.

Results and discussion

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

Source: Field Survey; 2020

Table 1 shows the demographic characteristics of respondents. Findings revealed that female (63.6) dominated the study population and majority of the study population were between 40-50 years of age. This was followed by above 50 years of age and the least age group were ages 29 years or less as indicated by 7.9 % of the total population. In terms of religious affiliation, 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%5 were Hausa while 44.7% were Ibo. Similarly, 29.9% were into farm produce, 19.55 were into provisions, 29.9% were into fish/meat business, and 6.2% were into clothing's while 6.2% were into other business. 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%)

Table 2: Level of adherence to COVID-19 practice among market men and women in Ogun State 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 nose 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 measure 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
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 use to 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 soup and water where all my customers will w\first be attended to before buying and selling begin	36 (7.5%)	95 (19.8%)	165 (34.3%)	185 (38.5%)	1.96	.94
	Criteria Mean = 2.50 Grand Mean = 2.45						

Table 2 presents the descriptive statistics showing Level of adherence to COVID-19 practice among market men and women in Nigeria. From the above, it can be

generalized that market men and women in Nigeria possessed a low level of adherence to COVID-19 protocols (Criteria mean of 2.50) is higher than the average mean of 2.45. In terms of the individual items, only Item No 1 to 5 indicated high level of adherence to COVID-19 protocols among market men and women. Whereas, for Item 6 to 11, the market men and women possessed low level of adherence to COVID-19 protective practice. In essence, level of adherence to COVID-19 practice among market men and women is higher on the statement that says "While at the market I make use of face mask continuously" (Mean = 2.83), followed by the statements that says "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 practice among market men and women is lower on the statements that says" I provide a container with soup and water where all my customers will wash hand before been attended to" (Mean = 1.96) followed by the statements that says" At intervals while at the market I use to wash my hand with soup and also apply hand sanitizer" (Mean = 2.17).

Table 2: Gender differences on the level of adherence to COVID-19 preventive precautions

Sex	N	Mean	Std. Deviation	Std. Error Mean	t-cal	Sig.
Male	175	24.9943	3.64123	.27525	7.653	.000
Female	306	28.1471	4.70242	.26882		

Table 2 present an independents sample t-test showing significant gender differences in the level of adherence to COVID-19 preventive precautions among market men and women in Ogun State Nigeria. The findings indicates a significant outcome (i.e t = 7.653; P< .05). This outcome implies that level of adherence to COVID-19 preventive precautions among market men and women is gender sensitive. Hence, there is a significant gender differences in the level of adherence to COVID-19 preventive precautions among market men and women in Ogun State Nigeria.

Table 3: Association between religious affiliation and level of adherence to COVID-19 preventive precautions

Religion	N	Mean	Std. Deviation	Std. Error Mean	t-cal	Sig.
Christian	272	26.5699	3.84606	.23320	2.350	.019
Islam	209	27.5598	5.38584	.37255		

The result in table 3 above indicate a significant outcome (t = 2.350; P< .055). This outcome implies that the mean level of adherence to COVID-19 preventive

precautions (26.57) recorded by Christian market men and women is significantly lesser compared with the mean value of 27.55 recorded by Muslim market men and women. Thus, there is a significant association in the level of adherence to COVID-19 preventive precautions among market men and women in Nigeria based on their religious belief.

Table 4: Association between age group and level of adherence to COVID-19 preventive precautions

Age Group	N	Mean	Std. Deviation	Std. Error	F-Cal	Sig
20-29 years	38	25.0000	2.31330	.37527		
30-39 years	86	27.9884	5.29705	.57120		
40-50 years	261	27.7126	4.65562	.28818	12.943	.000
Above 50 years	96	24.9688	3.51674	.35893		
Total	481	27.0000	4.60027	.20975		

Table 4 present the result of analysis of variance (ANOVA) showing significant association in the level of adherence to COVID-19 preventive precautions among market men and women in Nigeria based on their age group. The result above indicated a significant outcome (i.e F = 12.943; P< .05) the outcome implies that the mean level of adherence to COVID-19 preventive precautions (25.00) recorded by market men and women with age group of 20-29 years is significantly different from that of age group 30-39 years (Mean = 27.99), age group 40-50 years (Mean = 27.71) and that of age group of above 50 years (Mean = 24.97). The differences in mean are statistically significant. Hence, there is a significant association in the level of adherence to COVID-19 preventive precautions among market men and women in Ogun Sate Nigeria based on their age.

Table 5: Relationship between income of respondents and level of adherence to COVID-19 preventive precautions

Tests of Between-Subjects Effects

Dependent Variable: Level of Adherence to COVID-19 preventive precautions

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.
Corrected Model	2494.323[a]	4	623.581	38.731	.000
Intercept	281008.299	1	281008.299	17453.757	.000
Income Level	2494.323	4	623.581	38.731	.000
Error	7663.677	476	16.100		
Total	360807.000	481			
Corrected Total	10158.000	480			

a. R Squared = .246 (Adjusted R Squared = .239)

Table5 present the result of Analysis of Covariance (ANCOVA) showing the relationship between income of respondents and level of adherence to COVID-19 preventive protocols. The result indicated a significant outcome (i.e F= 38.731; P< .05). Also, the R^2 of .247 indicate variability in the level of adherence. This also implies that the level of income of market men and women influence their Level of Adherence to COVID-19 preventive protocols. Therefore, income level has a significant relationship with adherence to COVID-19 preventive protocols among market men and women in Ogun Sate Nigeria

Table 6: Association between level of Education and adherence to COVID-19 protocols

Educational Level	N	Mean	Std. Deviation	Std. Error	F-Cal	Sig
Primary School	90	23.3333	2.46321	.25965	584.182	.000
Secondary	328	26.1677	2.54848	.14072		
Higher School	63	36.5714	2.14562	.27032		
Total	481	27.0000	4.60027	.20975		

Table 6 present the result of analysis of variance (ANOVA) showing significant association in the level of adherence to COVID-19 preventive precautions among market men and women in Nigeria based on their level of education. The result above indicate a significant outcome (i.e F = 584.182; P< .05) the outcome implies that the mean level of adherence to COVID-19 protocols (23.33) recorded by market men and women with primary level of education is significantly different from that of secondary level of Education (Mean = 26.17) and that of Higher Education (Mean = 36.57). The differences in mean are statistically significant. Hence, there is a significant association in the level of adherence to COVID-19 protocols among market men and women in Nigeria based on their level of education.

Table 7: Relationship between family structure and level of adherence to COVID-19 protocols

Tests of Between-Subjects Effects

Dependent Variable: Level of Adherence to COVID-19 preventive precautions					
Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	888.151[a]	3	296.050	15.234	.000
Intercept	257348.674	1	257348.674	13242.429	.000
Family Structure	888.151	3	296.050	15.234	.000
Error	9269.849	477	19.434		
Total	360807.000	481			
Corrected Total	10158.000	480			
a. R Squared = .087 (Adjusted R Squared = .082)					

Table 7 present the result of Analysis of Covariance (ANCOVA) showing the relationship between family structure and level of adherence to COVID-19 protocols. The result indicated a significant outcome (i.e F= 15.234; P< .05). Also, the R^2 of .087 indicate variability in the level of adherence. This also implies that family structure of market men and women influence their Level of Adherence to COVID-19 protocols. Therefore, there is a significant association in the level of adherence to COVID-19 preventive precautions among market men and women in Nigeria based on their family structure

The result of the study found out that the level of adherence to COVID-19 preventive protocol is low in Ogun State among the market men and women. The finding is in consonance with (Nivette, Ribeaud, Murray et al, 2020; Roy, 2020; Folmer et al 2020) they reported that the level of adherence to COVID-19 preventive precautions is still low in spite of continuous education. In terms of gender, findings corroborate with that of Ogbonda, Douglas and Moore (2020) who affirmed that gender and job categories influences compliance with standard precaution among healthcare workers on COVID-19 preventive precautions. Also, findings of this study were in line with that of Rahman, Nakamura, Mahmudul-Hasan, Seino and Mostofa (2020) according to the authors, 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 ($P < 0.05$) on COVID-19 infection. Also, findings of this study correlate that of Li, Feng, Liao and Pan (2020) who concluded gender, age, ethnicity, marital status, and employment status were significantly linked with precautionary behaviors on COVID-19 preventive precautions. The finding agrees with previous other studies Li Feng, Liao and Pan (2020) worked on the related demographic variables, Shushtari et al, (2021) worked on social variables like income and other socioeconomic positions as it predicts adherence, Pengpid et al, (2021); Shewale et al, (2021), Missoni, Armocida and Formenti, (2021); Moran et al, (2021) worked on the psychosocial factors and the following: income, nature of behaviour like business acumen and skills which predicted adherence in the reports of their studies. Economic status plays significant role in adherence to Corona virus disease prevention protocols as revealed in the finding which agrees with (Renzako, 2020, Thakur et al, 2020, Raisi-Estabragh, et al, 2020, Patel, et al, 2020; Madu, Madu and Jacobowitz, 2019).

Level of education was found to predict adherence, study was in line with Rahman, Nakamura, Mahmudul-Hasan, Seino and Mostofa (2020), authors 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 ($P < 0.05$). Also, (Apanga and Kumbeni, 2021; Oyebola, Ezinne, Aderinsola and Joshua, 2021) they 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 at variance with (Saeed et al, 2022) they reported that religion is an important tool in health behaviour change intervention. The uniformity in the adherence level irrespective of religious alienation in this study agrees with (Gozum et al, 2021) that 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.

Conclusion and recommendations

In conclusion, this study has established that demographic characteristics of market men and women in Ogun state, to a large extent mediated adherence to COVID-19 preventive protocols. Therefore, there is need for more public enlightenment toward bridging the gap between policy and practice in such a way that all market men and women will be adequately informed about necessary precautionary measures mandatory for them as related to COVID-19 pandemic irrespective of their status. In addition, findings have also indicated that the level of adherence to COVID-19 protocols among market men and women in Ogun State is below expectation despite the havoc the virus had caused to economy, social , political, socio-political and socioeconomic development in general. In essence, there is need to create more awareness campaign about Covi-19 pandemic to this group of people. This can be done via radio, television or even talk can be organized at the community or local government level towards better information on this deadly virus.The following recommendations were made:

i. The intensive use of health education adopting various strategies should be enhanced at all levels to stem further spread of COVID-19 in Nigeria.
ii. Information about goverment should be communicated mostly to market men and women openly while at the market.
iii. The governments at all levels should support citizens, including market women and even men in the provision of protective materials.
iv. Local Government health personnel should be encouraged and sensitized to take awareness campaigns to market places.

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