Adherence to COVID-19 Preventive Behaviours: the Implication of Life Orientation and Sociodemographic Factors among Residents in Nigeria

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Abstract

There is a sporadic increase in the number of newly infected cases of COVID-19 in Nigeria and this conveys clearly, poor adherence to the preventive guidelines by WHO and NCDC. This study examined the roles of life orientation and socio-demographic factors on adherence to COVID-19 preventive behaviours among residents in Nigeria. Using an ex post facto design, 798 residents in Nigeria (M = 303, F = 485) responded to an online survey measuring the socio-demographics, Life Orientation Test-Revised (LOT-R) and validated adherence to COVID-19 preventive behaviours. Two research hypotheses were formulated and tested using t-test of independent samples and ANCOVA. Results revealed that life orientation had a significant influence on adherence to preventive behaviour during the COVID-19 outbreak, [$t_{(796)} = 14.72$; $p < .001$], such that respondents with optimistic life orientation adhered more significantly ($\bar{X} = 14.25$, SD = 1.71) than respondents with pessimistic life orientation ($\bar{X} = 10.28$, SD = 3.20). Furthermore, respondents' age [$F_{(1, 753)} = 04.69$, $p < .05$; $\eta_p^2 = .01$]; sex, $F_{(1, 753)} = 06.07$, $p < .05$; $\eta_p^2 = .01$]; education, [$F_{(5, 753)} = 11.70$, $p < .01$; $\eta_p^2 = .072$) and marital status, [$F_{(3, 753)} = 3.84$, $p < .01$; $\eta_p^2 = .015$] independently influenced adherence to COVID-19 preventive behaviours. The study concluded that life orientation and socio-demographic factors have serious implications for research efforts and policymaking in ensuring that people adhere to COVID-19 preventive behaviours in Nigeria.

Keywords

Adherence to COVID-19 Preventive-Behaviours, Life Orientation, Pessimism,

Optimism, Sociodemographic Factors, Nigeria

1. Introduction

The coronavirus outbreak in 2019 also known as COVID-19 broke out in Wuhan city, Hubei province in China (Guo et al., 2020; Harapan et al., 2020; Wu et al., 2020) and has spread across 218 countries and territories of the world (Worldometer, 2020). COVID-19 is a novel coronavirus characterized by pneumonia, fever, difficulty in breathing and infection in the lungs (Wuhan Municipal Health and Health Commission, 2020 as cited in Adhikari et al., 2020). Although, there are few recorded scientific breakthroughs with the vaccine, however, the cause of the pandemic and the treatment puzzle humanity at this time. Hence, preventive measures seem to be the possible way of curbing the sporadic spread of the pandemic while the search for the cure is still ongoing.

Prior to the outbreak of the COVID-19 pandemic, preventive health behaviours have been widely researched but there is paucity of studies on the preventive behaviours for COVID-19 since the pandemic is a novel coronavirus. This discourse, therefore, defines COVID-19 preventive health behaviours as total compliance to the practices stipulated by the WHO during the first wave of the pandemic in order to curb the community-spread of the novel coronavirus. The WHO recommended diverse levels of preventive strategies to the contagion including those pertaining to the general population (Adhikari et al., 2020), an indication that every individual has a role to play in curbing the spread of COVID-19. These measures are behaviours that individuals can adopt to contain the spread of the virus while clinical trials are being conducted to identify appropriate treatment and vaccination. The preventive behaviors recommended by the WHO include the use of face masks, covering cough and sneezes with disposable tissues or the flex of elbow, maintaining social distance of not less than 1.5 meters, regular washing of hands with soap and running water or disinfecting the hands with alcohol-based sanitizers, refraining from touching eyes, nose and mouth with unwashed hands, refraining from touching high-contact surfaces and avoiding gatherings.

The importance of preventive behaviours to infectious diseases has been moderately documented. For instance, preventive behaviours have been known to curb the outbreak of the Zika virus (Henao-Restrepo et al., 2015) and the Ebola virus (Gamma, Slekeine, & Mosler, 2019). Since preventive behaviours to infectious diseases are no longer new to human, it is then expected that the COVID-19 preventive behaviours should not be entirely strange to humanity and people should, in turn, adhere to COVID-19 preventive behaviours bearing in mind that the pandemic is a common enemy having a psychosocial and economic impact on national and international communities.

While the novel coronavirus was spreading so fast across continents of the

world, the WHO identified that 13 African countries including Algeria, Angola, Cote d'Ivoire, the Democratic Republic of the Congo, Ethiopia, Ghana, Kenya, Mauritius, South Africa, Tanzania, Uganda, Zambia, and Nigeria are most susceptible to being affected by the pandemic (Qian et al., 2020) due to frequent travels to and from some country (Gilbert et al., 2020). Despite the forewarnings and precautionary message by the WHO, the number of cases reported by National Center for Diseases Control "NCDC" (NCDC, 2020) in Nigeria at 100 days after the index case was discovered on February 27, 2020 exceeds 13,000. The virus continues to spread beyond the epicenter (Lagos) of the pandemic and the reasons for the sporadic increase in the contagion in Nigeria remains unclear.

Whether a person adheres to preventive behaviours of infectious disease has been theoretically substantiated. The health belief model (Rosenstock, 1966; Abraham & Sheeran, 2015) for instance, posits that the likelihood of adhering to a preventive behaviour is a function of a rational belief system. Also, emotional, perceptual, and other factors (e.g., socio-demographic) make humans respond contrary to preventive guidelines from their own rational point of view (Jayanti & Burns, 1998; Abraham & Sheeran, 2015). From this standpoint, this study investigated the influence of life orientation and socio-demographic factors on COVID-19 preventive behaviours among residents in Nigeria.

Life orientation is a belief and expectation system that one is in charge of actions and future outcomes (Gustems-Carnicer, Calderón, & Santacana, 2017). Life orientation may determine the adoption of protective/preventive behaviours in place of harmful ones (Scheier, Carver, & Bridges, 1994) since beliefs have been known to be a significant cognitive system underlying the performance of behaviours. Life orientation is a cognitive construct measuring optimism and pessimism. Optimists view life goals as realistic and obtainable so they tend to guard against circumstances that may truncate their life aspirations compared with pessimists. In the face of chronic diseases, optimists would rather adopt proactive and preventive behaviours hence they tend to have better outcomes (Carver & Scheier, 2014). Moreover, pessimistic people tend to be angrier, hostile, and prone to unhealthiness compared with optimistic individuals (Olaseni, Sylvester, & Olanrewaju, 2019).

Steca, Monzani, Avventi, Greco and Giardini (2017) noted that optimism is a strong predictor of cardiovascular health while Kim, Park and Peterson (2011) submitted that optimism is a protective factor against stroke. Moreover, optimistic life orientation tends to reduce the incidence of coronary heart disease (Boehm, Peterson, Kivimaki, & Kubzansky, 2011; Davidson, Mostofsky, & Whang, 2010). On the other hand, Pankalainen, Kerola, Kampman, Kauppi and Hintika (2016) reported that pessimism is a risk factor for death from coronary heart diseases. Optimism/pessimism orientation may have long-standing influence on adherence to COVID-19 preventive behaviours since life orientations are largely responsible for adaptive functioning such as adopting healthy behaviours during a pandemic.

The implications of socio-demographic factors in adopting preventive health behaviours have been fairly documented across studies. The exploration of the influence of socio-demographic factors revealed that gender and age are related to preventive behaviours (Siegrist, Keller, & Kiers, 2005). Specifically, compared with males, females tend to embrace health-related behaviours such as preventive behaviours since they act as family health managers (Achat, Close, & Taylor, 2005; Speedy & Hase, 2000) while people take responsibility for adherence to preventive behaviours as their age progresses (Deeks, Lombard, Michelmore, & Teede, 2009). Educational qualification was linked with healthy behaviours such as adherence to COVID-19 preventive behaviours (Feinstein, Sabates, Anderson, Sorhaindo, & Hammond, 2006). Finally, marital status is also considered a social factor that determines health behaviours in that married individuals showed better health outcomes than others (Kim, Lee, & Park, 2017). Given the standpoint of the aforementioned evidence, it is important to investigate the implications of life orientation and socio-demographic factors on the COVID-19 preventive behaviours and it is hoped that the study will bridge the widely noticed gap in knowledge on information about residents' responses to COVID-19 in Nigeria. In this light, the following are the hypotheses.

2. Hypotheses

1) Residents with optimistic life orientation will adhere to COVID-19 preventive behaviours significantly than residents with pessimistic life orientation in Nigeria.

2) Age, gender, educational qualification and marital status will have significant main and interactive influence on adherence to COVID-19 preventive behaviours among residents in Nigeria.

3. Methods

3.1. Research Design

This study was conducted using an expo-facto online survey. The design enables the researchers to reach wider range of respondents across the states in Nigeria to provide their existing behavioural responses to the COVID-19 pandemic without manipulation of any of the study variable.

3.2. Research Setting

Nigeria is a country in West Africa, bordering Niger in the North, Chad in the Northeast, Cameroon in the East and Benin in the West. The country comprises 36 states and 1 Federal Capital Territory, where the country's capital is located. The official language is English. The setting and the online survey respondents cut across the whole nation.

3.3. Sampling Techniques & Participants

Nigeria has a population over 200 million. The target populations were residents

in Nigeria as at the time of data collection and cut across the six geopolitical zones in the country. The sampling technique adopted in the study was Respondents Driven Sampling (RDS). The sampling technique allows the researcher to initiate a seed per geopolitical zones and afterwards engaged appropriate respondents across all geopolitical zones as weeds to participate in the study. Seven hundred and ninety-eight (798) respondents participated in the online survey which included a consent form.

3.4. Inclusion-Exclusion Criteria

The study entails some salient criteria that required the exclusion and inclusion of essential characteristics that are necessary to be considered in the study. The inclusion criteria include: residents in Nigeria; participants were adults (not less than 18 years); only consented participants were strictly engaged in the study.

3.5. Research Instruments

Online survey made up of widely used and psychometrically sound instruments was used for the data collection. The survey comprised three sections, Section A, B and C; Section A: Socio-demographics Section measured respondents' data such as Research Identification Number (RIN), age, gender, marital status, highest educational attainment, state of residence, occupation, religion. Section B: Life Orientation Test-Revised (LOT-R) developed by Scheier and Carver (1992). LOT-R is a 10-item measure of optimism versus pessimism life orientation. 3 items measure optimism, 3 items measure pessimism, and 4 items serve as fillers of the 10 items. Respondents rate each item on a 5-point scale with 0 = strongly disagree and 4 = strongly agree. The LOT-R reported strong internal reliability (α = .82). Section C: Adherence to COVID-19 preventive behavior (AcPB) is a 4-point scale with 1 = strongly unlike me and 4 = strongly like me. AcPB was adapted for a 7-point Preventive Checklist by the NCDC. The AcPB reported strong internal reliability (α = .92).

3.6. Procedures

Residents in Nigeria during the pandemic constitute the sample population. Information about participants' socio-demographics, life orientation and adherence to COVID-19 preventive behaviours were assessed through an online survey link designed on Google. The electronic medium of survey includes statement soliciting for their participation and also guaranteed confidentiality. 100% informed consents were sought from all participants in the study.

3.7. Statistical Analysis and Results

The collected data was analysed using SPSS package (version 25). The analyses which include t-test of Independent Sample and Analysis of Co-variance (ANCOVA) are therefore presented (see Tables 1-5).

Findings on the first hypothesis of the study that set to reveal the influence of

psychological factor that is, life orientation on adherence to preventive behaviour during COVID-19 outbreak in Nigeria was reported using t-test of independent sample as presented in Table 1.

Table 1 presented that life orientation had significant influence on adherence to preventive behaviour during COVID-19 outbreak among residents in Nigeria, t (796) = 14.72; $p < .001$. It was further revealed that respondents with optimistic life orientation, $\overline{X}$ = 14.25, SD = 1.71, adhered more significantly than respondents with pessimistic life orientation, $\overline{X}$ = 10.28, SD = 3.20. The outcome was in support of Hypothesis 1 and affirms that life orientation has significant influence on adherence to COVID-19 preventive behaviours among residents in Nigeria during the lockdown.

Findings in the study presented in Table 2 revealed that that respondents' chronological age (co-founding variable) plays significant role in influencing adherence to preventive behaviour during COVID-19 pandemics in Nigeria, F (1, 753) = 04.69, $p < .05$; η_p^2 = .01. Therefore, the potential cofounding effect of respondents' chronological age was statistically controlled for in the study to reveal the actual influence of the selected socio-demographic factors on adherence to preventive behaviour during COVID-19 lockdown in Nigeria.

Findings also (see Table 2) revealed that respondents' gender had significant influence on adherence to preventive behaviour, F (1, 753) = 6.07, $p < .05$; η_p^2 = .01. The phi eta coefficient revealed that 1% of the variance observed in adherence to

Table 1. Showing the significant influence of life orientation on adherence to preventive behaviour during COVID-19 outbreak in Nigeria.

DV	IV	N	$\overline{X}$	SD	Df	T	p
Adherence to COVID-19 Preventive Bhr.	Pessimism LOT	648	10.28	3.20	796	14.72	<.01
	Optimism LOT	150	14.25	1.71			

Table 2. Influence of socio-demographic factors: Age, Gender, Educational Qualifications, and Marital Status on adherence to preventive COVID-19 behaviour.

Source	SS	df	MS	F	p	η_p^2
Age	36.28	1	36.28	4.69	<.05	.006
Gender (X)	46.92	1	46.92	6.07	<.05	.008
Education (Y)	452.11	5	90.42	11.70	<.01	.072
Marital Status (Z)	89.04	3	29.68	3.84	<.01	.015
X*Y	23.90	5	04.78	0.62	>.05	.004
X*Z	7.86	3	2.62	0.34	>.05	.001
Y*Z	172.87	11	15.72	2.03	<.05	.029
X*Y*Z	36.37	5	7.27	0.94	>.05	.006
Error	5821.20	753	7.73			
Total	103,908.00	788				

COVID-19 preventive behaviours among residents in Nigeria was strictly accounted for by respondents' gender. Determining the significant magnitude of F Value, the estimated marginal means (see Table 3) was conducted.

Result in Table 3 revealed that female respondents, $\overline{X}$ = 10.79; Std. Err = 0.39, were more adhered to COVID-19 preventive behaviour than the male counterparts, $\overline{X}$ = 09.42; Std. Err = 0.32.

Furthermore, study outcomes showed that educational attainment had significant influence on adherence to COVID-19 preventive behaviours, F (5, 753) = 11.70, $p < .01$; η_p^2 = .072. The phi eta coefficient revealed that 7.2% of the variance observed in adherence to COVID-19 preventive behaviours among residents in Nigeria was accounted for by respondents' level of educational attainment (see Table 2). In order to ascertain the significant magnitude of F Value, a multiple group comparison test was conducted (see Table 4).

Consequently, Scheffe post hoc analysis presented in Table 4 revealed that with a total adjusted mean of 12.28, respondents with postgraduate qualifications (n = 92) did notadhere more to COVID-19 preventive behaviours when compared to respondents with bachelor degrees/HND, n = 401; MD = 0.19; $p > .05$,with the adjusted mean of 11.81. however, respondents with postgraduate qualifications adhered more when compared withND/NCE holders, n = 92; MD = 2.02; $p < .05$, with the adjusted mean of 9.94; Secondary School Certificate holders, n = 134; MD = 3.25; $p < .05$, with the adjusted mean of 9.22; Primary School Leaving Certificate holders, n = 74; MD = 3.07; $p < .05$, with the adjusted mean of 9.32 and respondents with no formal education, n = 04; MD = 5.43; $p < .05$, with the adjusted mean of 7.00.

Table 3. Independent t-test analysis showing the estimated marginal means of respondents' gender on adherence to COVID-19 preventive behaviour in Nigeria.

	Groups	N	$\overline{X}$	Std.E	1	2
1	Male Respondents	303	09.42	00.32	1	
2	Female Respondents	485	10.79	00.39	01.37*	1

Note: *$p < .05$.

Table 4. Showing the summary of scheffe post hoc analysis of the educational qualifications on adherence to preventive COVID-19 behaviour.

	Groups	N	$\overline{X}$	Std.E	1	2	3	4	5	6
1	Postgraduate Education	092	12.28	.32	1					
2	University Degree/HND	401	11.81	.32	.64	1				
3	OND/NCE	092	10.47	.42	2.02*	1.38*	1			
4	Secondary School Education	134	9.22	.38	3.25*	2.61*	1.22	1		
5	Primary School Education	075	9.32	.44	3.07*	2.43*	1.04	.17*	1	
6	No Formal Education	004	07.00	1.42	5.43*	4.79*	3.41	2.18	2.36	1

Note: **$p < .05$.

In **Table 2,** findings revealed that marital status had significant influence on adherence to COVID-19 preventive behaviours, holding constant, the influence of age, F (3, 753) = 3.84, $p < .01$; η_p^2 = .015. The phi eta coefficient showed that 1.5% of the variance observed in adherence to COVID-19 preventive behaviours among residents in Nigeria was accounted for by respondents' marital status. In order to ascertain the significant magnitude of F value, a multiple group comparison test was conducted (see **Table 5**).

Consequently, Scheffe post hoc analysis (see **Table 5**) revealed that with a total adjusted mean of 12.08, respondents who were married, n = 431, adhered better to COVID-19 preventive behaviours when compared to their counterparts who were unmarried/single, n = 333; MD = 2.37; $p < .05$, with the adjusted mean of 9.73; respondents who were either separated or divorced n = 18; MD = 1.44; $p < .05$, with the adjusted mean of 10.67; and respondents who were widow/er, n = 16; MD = 2.23; $p < .05$, with the adjusted mean of 9.87.

4. Discussion

This study investigated the implications that life orientation (optimism and pessimism) and socio-demographic factors have on adherence to COVID-19 preventive behaviours. The findings provide support for life orientation and socio-demographic factors influencing adherence to COVID-19 preventive behaviours. The outcome of the study revealed that life orientation is a mindset or attitude that might determine adherence to preventive behaviours for infectious diseases. Specifically, the findings further indicate that optimistic life orientation motivates people towards adherence more than pessimistic life orientation.

The findings support the hypothesis that optimistic life orientation will impact adherence to COVID-19 preventive behaviours compared with pessimistic life orientation. This finding is consistent with previous findings (see Carver & Scheier, 2014; Steca et al., 2017) which indicated that optimism is a strong predictor of cardiovascular health. Specifically, optimistic orientation increases the tendencies for people to take personal responsibility for curbing infectious diseases (Kim et al., 2011) while pessimism is a strong independent risk factor for death from chronic and infectious diseases (Pankalainen et al., 2016). The outcome suggests that optimistic people have fine-tuned hopes about their goals

Table 5. Showing the summary of Scheffe post hoc analysis of marital status on adherence to preventive COVID-19 behaviours.

	Groups	N	$\overline{X}$	Std.E	1	2	3	4
1	Unmarried	333	9.73	.71	1			
2	Married	431	12.08	.20	2.37*	1		
3	Separated/Divorced	018	10.67	.67	.93	1.44*	1	
4	Widow(er)	016	9.87	.69	−.13	2.23*	.79	1

Note: **$p < .05$.

and aspirations in life which may increase adherence to COVID-19 preventive behaviours. It may also imply that optimism allows people to have clearer goals, visions and aspirations, hence the determination to guard against unforeseen circumstances (e.g., COVID-19 pandemic) that may surface in the course of their pursuit.

The study further revealed that females adhered more to COVID-19 preventive behaviours which is consistent with previous findings (e.g., Achat et al., 2005; Speedy & Hase, 2000). This finding confirms the assertion that women are the home managers and by virtue of this role, are likely to adhere more to COVID-19 preventive behaviours. Moreover, females tend to be submissive and compliant (Achat et al., 2005), thus, COVID-19 preventive behaviours might be one of the behaviours they would naturally adhere to.

The findings from the study also indicated that educational attainment had a significant influence on COVID-19 preventive behaviours such that individuals who had a postgraduate degree or a graduate degree adhered more to COVID-19 preventive behaviours compared with people who had lesser educational qualifications. This corroborates Feinstein et al. (2006) that education attainment enhances protection against sudden health challenges, suggesting that high level of education makes people be better informed on the need to adhere to COVID-19 preventive behaviours.

Married women were seen to adhere more than individuals who were unmarried, separated/divorced and widow/er. The finding is similar to Kim et al. (2017) who noted that married individuals, compared with other marital statuses had better health outcomes. In this light, Kim et al. (2017) argued that married individuals are at advantage of receiving social and psychological support and economic resources. Thus, married individuals might have adhered more to COVID-19 preventive behaviours due to the marriage protection supports offered by people around them.

5. Implication of Findings

The findings imply that there is a strong link between life orientation, socio-demographic factors and adherence to COVID-19 preventive behaviours in Nigeria. This research is one of the few studies to unpack the psychosocial and socio-demographic reasons why there is continuous rise in the community-spread of COVID-19 pandemic in Nigeria. The present study, therefore, provides a background for future studies on the attitudinal perspective to adherence to COVID-19 preventive behaviours. It is therefore imperative that subsequent researches extend the scope of this study by investigating other attitudinal variables that could influence adherence to COVID-19 preventive behaviours.

Nevertheless, this study has established that life orientation and socio-demographic status may influence the adoption of COVID-19 preventive behaviours, it is important that stakeholders (e.g., National Orientation Agency) in Nigeria need to focus more on imparting optimistic life orientation on Nigerians begin-

ning from childhood as one of the measures to make people adhere to preventive behaviours of infectious diseases including COVID-19 so that the novel corona virus becomes history in a short while.

6. Study Limitations

Interpreting results for the study should be done with caution due to some limitations. The findings in this study are limited to residents in Nigeria with proficient knowledge in internet usage and ability to read and understand in English language. Furthermore, data collection cuts across all geopolitical zones in Nigeria but unequal representation of data was gathered across the six geopolitical zones in Nigeria and therefore, findings can only be generalized with caution. Most of the variables considered in the study were assessed through respondents' self-report means, which may be prone to confirmatory biases or socially desired responses. Moreso, numerous concepts/variables that may influence adherence to preventive behaviours during COVID-19 pandemic were not all integrated into the study's scope and should be included in future research.

7. Conclusion

Life orientation was implicated to influence adherence to COVID-19 preventive behaviours, such that optimistic respondents were found to adhere better to COVID-19 preventive behaviours than pessimistic respondents. The study found that gender has a significant influence on adherence to COVID-19 preventive behaviours, such that female respondents reportedly adhered better to COVID-19 preventive behaviours than the male counterparts. Educational attainment also had a significant influence on adherence to COVID-19 preventive behaviours, such that respondents with postgraduate certificates reportedly adhered better to COVID-19 preventive behaviours than others with lower levels of qualification. Finally, married respondents were found to adhere better to COVID-19 preventive behaviours than the counterparts who are single, divorced/separated, or widowed.

8. Funding Declaration

Ethical Compliance

The authors are aware of the need to obtain ethical approval or exemption for the study in accordance with standard requirements. Ethical approval or exemption wasn't obtained from the Ethical Review and Research Ethics Committee of the State Ministry of Education due to total and enforced lockdown at its peak as at when the study was set for data collection. However, based on the criteria

checklists, the study was due for ethical exemption due to the following reasons:

- There was no cohesion to participate; written informed consent was sought before completion of the questionnaire/survey and only those who were willing responded;
- Privacy and confidentiality was maintained as personal identity of potential respondents were not obtained;
- Research involves no more than minimal risks;
- Participants had the option to discontinue the process of response;
- Data on phenomenon of interest (COVID-19) is already available in public domain;
- Ethical principles such as risks, benefits, social values, qualification of researchers, principle of confidentiality and voluntariness were well spelt out to every participant;
- Two of the researchers have undergone training from West African Bioethics Research Training Program affiliated with CITI Collaborative Institutional Training Initiative, and so are well informed on research with human subjects, especially in social and behavioural sciences.

Informed Consent

Informed consent was obtained from all individual adult participants.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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