

# Psychological, Socioeconomic Effects of COVID-19 Pandemic and Associated Prevalent Self-Reported Vulnerability Factors among Residents of Southwest Nigeria

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## Abstract

**Background:** Infectious diseases wrecked havoc in global economies, especially when outbreak or pandemic occurs. The present COVID-19 pandemic has not only caused disruption to global activities but also of businesses, trades, movements, and academic activities. Southwest Nigeria has the highest burden of COVID-19 of all the six geopolitical zones in the country. This study, therefore, aims at determining the psychological, socioeconomic effect of COVID-19 pandemic and associated vulnerability factors among residents of Southwest Nigeria. **Methods:** This survey is a cross-sectional study in the six southwest states of Nigeria via Google questionnaire sent electronically to obtain information from respondents. Targeted sampling and snowball techniques were used to reach the respondents. Data were analyzed using SPSS 23, and the level of statistical significance was at  $P < 0.05$ . **Results:** The mean age of the respondents is  $32.89 \pm 9.59$  years and age range of 16–57 years. Majority of the respondents were males, married with tertiary education. Majority (83.9%) of the respondents have severe psychological effects, 78.2% have their family income affected, while diabetes, asthma, cardiovascular diseases, cancers, previous contact with a confirmed case and travel history outside Nigeria were among the self-reported vulnerable factors of COVID-19. **Conclusion:** The study concluded that the psychological and economic effects of COVID-19 are high in Southwest Nigeria and major self-reported vulnerable factors include cardiovascular diseases, diabetes, asthma, and cancers. Scale-up of public awareness, subsidization of personal protective equipment, and financial stimulus are recommended measures against the disease.

**Keywords:** COVID-19, effect, Nigeria, vulnerability

## INTRODUCTION

A thriving and productive society is dependent on good health while production, consumption, recreation, travel, and overall well-being can be stifled by fear and illness.<sup>[1]</sup> Ill-health can cause losses in individual utility and social welfare in various ways. These losses can be directly (because good health is preferred by all) or indirectly by reducing the opportunity to the consumption of goods and services unrelated to health or even by compromising some other economic objectives such as income generation that allows people to consume goods and services.<sup>[2]</sup> Infectious diseases affect global economies, especially when an outbreak (sharp increase in prevalence of a disease in a defined limited population), an epidemic (sharp increase affecting a larger population), or a pandemic (epidemic affecting multiple

nations or continents) occurs.<sup>[3]</sup> While the most important aspect of an epidemic is the loss of human lives, however, the spread of an infectious agent can also have very devastating repercussions on the economy at national or regional level.<sup>[4]</sup>

Evidence from various studies and surveys reported that epidemic disease impacts on national economies through

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several ways such as health, transportation, tourism and agriculture. Furthermore, this impact can affect trade with other countries, and the interconnectivity existing in modern economies means that an epidemic can also affect international supply chains.<sup>[4]</sup> It was estimated that the total value of losses (including lost income in 1918 pandemic) could be as much as US\$500 billion per year, which is equivalent to about 0.6% of global income. This estimated was assessed through reductions in the size of the labor force and productivity, increases in work absenteeism, economic activity disruption due to individual and social measures that help interrupt transmission, and the intrinsic cost of elevated mortality.<sup>[4,5]</sup> Infection possesses special characteristics with the potential of causing disproportionate degree of fear.<sup>[6]</sup> Furthermore, during disease outbreaks, denial, fear, stigmatization, and loss have been reported in the affected individuals.<sup>[6]</sup> They also share the uncertainty, anxiety, and potential to develop irrational attitude due to fear of the unknown disease; a phenomenon called “germ panic.”<sup>[6]</sup>

Beyond devastating blow to the health sector, epidemics cause both the ill and their caregivers to either miss work or be less productive at work leading to disrupted and reduced productivity. Furthermore, fear of infectious diseases can lead to school closure, social distancing, shut down of enterprises, commercial establishments, transportation, and public services – all of which disrupt the economy and other important social activities.<sup>[2]</sup> The present COVID-19 pandemic has not only caused disruption to global activities but also of businesses, trades, movements, and academic activities. Therefore, the economic risks of epidemics, which include both loss in income and the intrinsic cost of elevated mortality, are not trivial. Even when an outbreak impact on health is relatively limited, its economic consequences can rapidly become magnified.<sup>[2]</sup>

The World Bank and World Health Organization in a joint report estimated the impact of a pandemic such as the 1918 pandemic upward, to cost about 2.2%–4.8% of global gross domestic product (GDP) (US\$3 trillion). The report also noted that South Asia’s GDP could potentially fall by 2% (US\$53 billion) and sub-Saharan Africa’s GDP by 1.7% (US\$28 billion) due to such event.<sup>[4]</sup> The International Monetary Fund also finds that vulnerable populations, especially the poor, are at higher risk of suffering disproportionately from an outbreak, as they may not have enough access to health care and needed savings to protect themselves against financial catastrophe.<sup>[3,4]</sup>

Due to Ebola outbreak (from 2013 to 2014), GDP growth in Sierra Leone (excluding iron ore) decreased from 5.3% to 0.8% while that of Liberia decreased from 8.7% to 0.7%. Furthermore, the GDP growth in Guinea in 2015, which was predicted at 4%, reduced to 0.1%.<sup>[1,2]</sup> Nigeria budget for 2020 which was based on oil benchmark of \$57 per barrel and estimated at 10.59 trillion naira representing about 11% of the national GDP is currently being threatened with the drastic reduction in oil price in the international market to

\$26 per barrel due to this present COVID-19 pandemic.<sup>[7]</sup> The SARS epidemic, like other types of disasters, also causes an increase in posttraumatic stress disorder (PTSD), stress, and psychological distress in both patients and clinicians.<sup>[8-11]</sup> For events of such magnitude, the impact on mental aspect of health can occur either in the immediate aftermath or persist over long time periods.<sup>[8]</sup>

In a study done to assess the psychological effect of COVID-19 among health-care workers, it was reported that 14.5% of the participants have anxiety, 8.9% have depression, 6.6% have stress, and 7.7% show clinical symptoms of PTSD. It was also discovered that the prevalence of anxiety was higher in the nonmedical health-care personnel than medical health-care workers (20.7% as against 10.8%).<sup>[12]</sup>

Infectious diseases have significantly shaped the human history and engraved an automatic response in our subconscious of a fear of infection.<sup>[6]</sup> Denial, frustration, fear, and even stigmatization have been reported as some of the psychological effects of epidemics and disease outbreaks.<sup>[6]</sup> Furthermore, the control of infectious disease outbreak may sometimes infringe on individual civil rights and liberties.<sup>[6]</sup> The COVID-19 disease is a novel disease affecting many countries of the world, Nigeria inclusive. With the high reproduction number of COVID-19 and its mode of transmission which encourages a rapid rate of spread, it has made it imperative for different governments to put in public health preventive measures such as restriction of movement, lockdown, and stay at home. In Nigeria, the six southwest state governments also instituted a stay at home measures collapsing businesses, movements, and all economic activities in the state. Therefore, the aim of this study is to determine the psychological, socioeconomic effect of COVID-19 pandemic and the associated vulnerability factors among the residents (aged 18 years and above) of Southwest Nigeria.

## METHODS

### Study area

Nigeria is the most populous African country with a population of about 200 million. The country is located in the Gulf of Guinea.<sup>[13]</sup> The country lies on Africa’s west coast and occupies 923,768 km<sup>2</sup> of land bordering Benin, Chad, Niger, and Cameroon.<sup>[14]</sup> She has over 250 ethnic groups spread across the country. The major indigenous languages of the country are Yoruba, Igbo, and Hausa/Fulani. However, the official language in the country is English. Aside the human resource, Nigeria is blessed with a lot of other natural resources, including crude oil, bitumen, and agricultural products. The country is a federation unit, operating a 3-tier governance system at the national, state, and local government levels. It has 36 states including the Federal Capital Territory and 774 local government areas.<sup>[14]</sup> In order for ease in administration and accelerated development, the country is divided broadly into six geopolitical zones, namely South West (SW), South East (SE), South South (SS), North West (NW), North East (NE), and North Central (NC).

The SW region is bounded to the north by the NC and NW region, to the south by the Gulf of Guinea, the east by the SE region, and to the west by the Benin Republic. The region is the home to two largest of the Nigeria's three largest cities (Lagos and Ibadan). Which are Lagos, Ekiti, Ondo, Ogun, Osun, and Oyo with a total of 20, 16, 18, 20, 30, and 33 LGAs respectively. The indigenous people of the SW are mainly Yorubas with some nonindigenes such as Hausa, Igbos, Ebira, and other ethnic groups also exist in the state. The predominant religions are Islam and Christianity and few traditional worshippers. The people are involved in various occupations, such as the civil service, trading, farming, and organized private business owners, which enhance mobility and expose residents to social interaction and physical convergence promoting disease transmission.<sup>[14]</sup>

The SW geopolitical zone lies in the rainforest belt of the country. It enjoys a tropical climate, with two distinct seasons which are the rainy season (March to November) and the dry season (November to February).<sup>[14]</sup> States in the zone, all of which have recorded cases of COVID-19, have numerous private/public health facilities (primary health centers, comprehensive health centers, and teaching hospitals) and numerous schools ranging from primary to tertiary level.<sup>[14]</sup> In the current COVID-19 pandemic, SW geopolitical zone has the highest number of cases of COVID-19, constituting more than half of the national burden, and remains the worst affected geopolitical zone in Nigeria with Lagos, being the epicenter of the pandemic in Nigeria.

### Sample size determination and study design

This was a cross-sectional study to determine the psychological, socioeconomic effect of COVID-19 pandemic and the associated vulnerability factors among the residents of SW Nigeria. With the population of inhabitant in the six study states being > 10,000, the minimum number ( $n$ ) of subjects required for the study was calculated using the Fischer's formula:<sup>[15,16]</sup>  $n = z^2pq/d^2$ , where  $n$  = minimum sample size,  $z = 1.96$  at 95% confidence limit,  $P$  (prevalence of moderate psychological distress during equine influenza outbreak) of 27% (0.27),  $q = 1 - p = 0.73$ , and  $d = 0.05$ . This gives  $n = (1.96)^2 \times 0.27 \times 0.73 / (0.05)^2$ . The minimum sample size obtained was 303, but after compensation for 10% nonresponse, a minimum sample size of 333.3 (approximately 335) was obtained.<sup>[16]</sup>

### Data collection

Data collection was done through the use of structured, pretested (pretest was done in the NC state of Kwara) questionnaires. However, due to the ongoing COVID-19 pandemic lockdown and the restriction of movement during the data collection and the need to observe physical distancing, the final questionnaire was developed into an online Google questionnaire format. The Google questionnaire, which was adapted/developed by the researchers from existing literatures, was sent electronically (via Facebook, Messenger, LinkedIn WhatsApp, and E-mail).<sup>[17]</sup> To complement/ease data collection, an online database of target participants was

collated by reviewing relevant online social platforms and websites of different groups in SW Nigeria. The respondents belonged to different social categories; relevant individuals were selected for targeted sampling using snowballing,<sup>[17]</sup> and the questionnaires' responses were gotten at the back end of the Google Forms software.

### Data analysis

Data were edited on collection and entered into Excel. However, out of the 378 Google questionnaires sent out, a total of 335 questionnaires were completely filled/returned by the respondents and analyzable giving a response rate of 90% (approximately). The data were cleaned, coded, and imported into IBM SPSS version 25 for statistical analyses. Percentage, proportions, measure of central tendency, and univariate frequency table were used to present the sociodemographic characteristics of respondents. Chi-square test was used to determine associations with psychological effects and Fisher's exact test used where more than 20% of expected counts were <5. Binary logistic regression analysis (multivariate analysis) was used to determine the predictors of psychological effects with all the variables that had a statistically significant association with the psychological effect included in the model.

### Psychological effect

Psychological effect was assessed using 17 questions, adapted from existing literatures,<sup>[16,18]</sup> on a 3-point Likert scale: 1 – “never,” 2 – “sometimes,” and 3 – “always.” The responses were summed to create a total obtainable score of 51 – the lower the score, the lower the psychological effect. To facilitate ease of analysis, the summative interpretation of the Likert was done by reclassifying the responses into three categories: mild, moderate and severe. A score of 0–17 was classified as mild, 18–34 as moderate, and 35–51 as severe.

The prevalence of the COVID-19 vulnerability factors was assessed through self-report by the respondents.<sup>[19]</sup> For factors such as diabetes, hypertension, asthma, cardiovascular disease, and cancer, only those who reported prior evaluation and diagnosis by a medical doctor were taken as those with the disease.

### Ethical approval

Ethical clearance for this study (Protocol number ERC/2020/04/05/367A) dated May 5, 2020, was gotten from the Health, Research, and Ethical Committee of Federal Teaching Hospital, Ido-Ekiti, Nigeria. Data collection was conducted over a period of 6 weeks, between May 9 and June 25, 2020. The introductory part of the online questionnaire was used to explain the study to the participants, and informed consent was sought; response to the online questionnaire was voluntary.

## RESULTS

The results were presented using prose, tables, and charts. In Table 1, about a third of the respondents were in the age groups 25–34 years and 35–44 years. Two-thirds (68.1%) of

the respondents were males, and majority were married. While more than half had tertiary education, private employees constituted the majority. In Table 2, more than half (59.4%) of the respondents had hesitation going to work for fear of contracting COVID-19. More than three-quarters (88.1%) felt that the government has not adequately protected them; less than half (44.8%) feel protected at the place of work. Furthermore, majority have their family income (78.2%), family feeding (70.7%), leisure (74.6%), and security (78.5%) negatively affected by COVID-19 pandemic. In Figure 1, more than three-quarters of the respondents in Oyo (93.2%), Ogun (87.7%), Lagos (81.5%), and Ekiti (84.8%) states have severe psychological effects as a result of the COVID-19 pandemic ( $\chi^2 = 11.97$ ;  $P < 0.05$ ). None of the respondents in all the six states has mild psychological effect. Figure 2 shows a negatively skewed Gaussian curve of the scores of psychological effect, with a mean score of  $39.6 \pm 5.6$ . As shown in Table 3, while about a quarter (23.2%) of the Christian respondents have moderate psychological effect compared with just a tenth (10.9%) among the Muslim faithful, more than three-quarters of the respondents in the two religions have severe psychological effect due to COVID-19 ( $P < 0.05$ ). All (100.0%) the traders and majority of the health professionals, government employees, and all other occupational groups have severe psychological effect to COVID-19 ( $P = 0.019$ ). Majority of the respondents in all the study states reported severe psychological effect ( $P = 0.035$ ). As seen in Table 3, about a quarter (24.7%) of the respondents whose family income has not been negatively affected by the COVID-19 pandemic have moderate psychological effect compared with about a tenth (13.7%) among those whose family income was negatively affected by the pandemic. However, more than three-quarters of those with family income negatively affected (86.3%) and those whose income was not affected (75.3%) had severe psychological effect ( $P = 0.025$ ). Compared with other occupational groups, health professionals and government employees are seven times more likely to develop severe psychological effect as a result of COVID-19, and this was found to have statistical significant with  $P$  values of 0.004 and 0.002, respectively [Table 4].

## DISCUSSION

This study found that about two-third of the respondents were within the age group of 25–34 years and 35–44 years. The mean age was  $32.89 \pm 9.59$  years and age range of 16–57 years. This might be because majority of the social media users are within the adolescent, youth, and middle-aged population. This is similar to findings in the first outbreak of equine influenza in Australia<sup>[16]</sup> where study shows that about half of the respondents are within 25–34 years and 35–44 years. However, it differs from a similar study, on psychosocial and socioeconomic crisis due to COVID-19, conducted in Bangladesh, where about three-quarters were in the 18–30 years age group with a mean age of  $27.80 \pm 10.05$  years.<sup>[17]</sup>

Majority of the respondents in this study (58.5%) were married. This finding is slightly higher than that reported in a study in Singapore which assessed the psychological impact

**Table 1: Sociodemographic characteristics of respondents (n=335)**

Variable	Frequency (%)
Age (years)	
15- 24	84 (25.1)
25- 34	103 (30.7)
35- 44	105 (31.3)
45- 54	35 (10.4)
≥ 55	8 (2.4)
Mean±SD	32.89±9.59
Range	16- 57
Sex	
Female	107 (31.9)
Male	228 (68.1)
Marital status	
Single	136 (40.6)
Married	196 (58.5)
Separated	1 (0.3)
Widowed	2 (0.6)
Religion	
Christianity	142 (42.4)
Islam	193 (57.6)
Ethnicity	
Yoruba	316 (94.3)
Hausa	3 (0.9)
Igbo	10 (3.0)
Others	6 (1.8)
Highest level of education	
Primary	1 (0.3)
Secondary	24 (7.2)
Tertiary	198 (59.1)
Postgraduate	110 (32.8)
Others	2 (0.6)
Occupation	
Health professional/worker	49 (14.6)
Government employee	59 (17.6)
Private employee	132 (39.4)
Artisan	26 (7.8)
Trader	16 (4.8)
Unemployed	9 (2.7)
Student	44 (13.1)
Average monthly income (naira)	
<18,000	77 (23.0)
18,000- 30,000	70 (20.9)
>30,000	188 (56.1)
State of resident	
Ekiti	33 (9.9)
Lagos	92 (27.5)
Ogun	114 (34.0)
Ondo	16 (4.8)
Osun	36 (10.7)
Oyo	44 (13.1)

SD: Standard deviation

**Table 2: Respondents' psychological experiences and socioeconomic effect of COVID-19 pandemic (n=335)**

Variable	Yes, n (%)	No, n (%)
Fear of being infected or any member of family being infected with COVID-19	134 (40.0)	201 (60.0)
Fear about disability that could result if infected with COVID-19 infection	138 (41.2)	197 (58.8)
Hesitation to go to work due to fear of contacting COVID-19 infection	199 (59.4)	136 (40.6)
Feel being avoided by others due to COVID-19 infection	76 (22.7)	259 (77.3)
Have no choice but to work due to obligation	169 (50.4)	166 (49.6)
Have sign of physical exhaustion due to the pandemic	75 (22.4)	260 (77.6)
Have sign of mental exhaustion due to the pandemic	96 (28.7)	239 (71.3)
Sign of sleep difficulty at this time could be COVID-19 related	47 (14.0)	288 (86.0)
Feel being isolated due to the pandemic	124 (37.0)	211 (63.0)
Have burden of change in the quality of work	148 (44.2)	187 (55.8)
Have burden due to change in quantity of work	154 (46.0)	181 (54.0)
Feel adequate protected by the governments	40 (11.9)	295 (88.1)
Feel protected at place of work	150 (44.8)	185 (55.2)
Aspects of live affected negatively		
Family income	262 (78.2)	73 (21.8)
Family feeding	237 (70.7)	98 (29.3)
Lifestyle	278 (83.0)	57 (17.0)
Leisure	250 (74.6)	85 (25.4)
Resting pattern	186 (55.5)	149 (44.5)
Security in the community	263 (78.5)	72 (21.5)
Impact on children		
More time to study	178 (53.1)	157 (46.9)
More time to play	302 (90.1)	33 (9.9)
More time to socialize	73 (21.8)	262 (78.2)
More time to bond with parents	322 (96.1)	13 (3.9)
Factors present in respondent		
Age ≥60 years	0 (0.0)	335 (100)
Diabetes	170 (50.7)	165 (49.3)
Hypertension	171 (51.0)	164 (49.0)
Asthma	186 (55.5)	149 (44.5)
Cardiovascular disease	176 (52.5)	159 (47.5)
Cancer/immune compromised state	181 (54.0)	154 (46.0)
Previous close contact with a covid-19 confirmed case	186 (55.5)	149 (44.5)
Smoking	159 (47.5)	176 (52.5)
Willing to present for testing/treatment if symptomatic of COVID-19	309 (92.2)	26 (7.8)
Society will stigmatize one if they think or know that one has COVID-19	242 (72.2)	93 (27.8)
Travel history to country or areas within Nigeria with high incidence of COVID-19 in the last 6 weeks	15 (4.5)	320 (95.5)
Sharing apartment with relatives who works in a hospital/health facility	66 (19.7)	269 (80.3)

Contd...

**Table 2: Contd...**

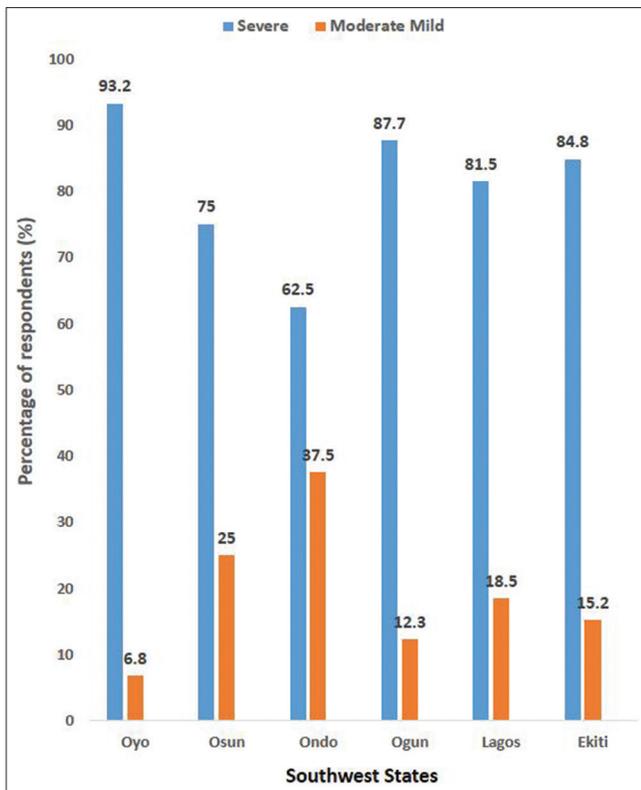
Variable	Yes, n (%)	No, n (%)
Type of apartment respondent and family lives in		301 (89.9)
Flat	209 (62.4)	
Room and parlor detached	111 (33.1)	
Single room detached	13 (3.9)	
Number of persons in same room		
alone	71 (21.2)	
2 persons	107 (31.9)	
3 persons	68 (20.3)	

of COVID-19 among health-care workers, with married respondents being just about half (49.4%).<sup>[12]</sup> More than half of our respondents in this study have tertiary education, a reflection of the high educational exposure of the people of the SW region of Nigeria. Furthermore, this might be due to the electronic mode of data collection. This finding is higher than that reported in an Australia study on factors influencing psychological distress during epidemics where those with tertiary education were less than half (40.2%).<sup>[16]</sup>

Majority (66.6%) of this study respondents always think about the COVID-19 pandemic while more than half (59.4%) of the respondents had hesitation going to work for fear of contracting COVID-19. This was similar to the study in Bangladesh where 32.7% strongly agreed that they are fearful of contacting coronavirus.<sup>[17]</sup> The daily release of morbidity and mortality figures as a result of COVID-19 in Nigeria, which heightens fear of disease, can be responsible for this. In addition, the poor global outlook in terms of deaths from this disease might also be a factor. This study also found that more than three-quarters (88.1%) felt that the government has not adequately protected them and less than half (44.8%) feel protected at the place of work. This might be due to nonprovision of protective gears to the citizens by the government and the low rate of testing of the few in the midst of community transmission.

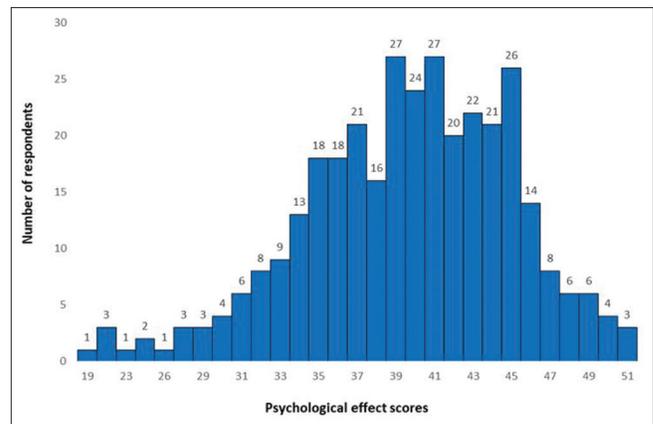
Findings in this study showed that majority have their families income (78.2%), feeding (70.7%), leisure (74.6%), and security (78.5%) negatively affected by COVID-19 pandemic. This is probably due to strict enforcement of lockdown and movement restriction by the governments in the SW region of the country. This causes loss of income among the populace which was worsened by the lack of support/stimulus from the government. This finding is worse than what was documented in Australia during equine influenza where majority of the respondents (76%) reported that their main sources of income were not linked to industries most affected by the pandemic.<sup>[16]</sup>

Majority (83.9%) of the respondents in this study had severe psychological effects. This might be due to the spread and disruption of social and economic activities associated with COVID-19 and the widely reported deaths, involving the rich and the poor caused by the disease. Psychological effect



**Figure 1:** Distribution of psychological effect of COVID-19 in the six southwest states of Nigeria ( $\chi^2 = 11.97$ ;  $df = 5$ ;  $P = 0.035$ )

was worsened by religious belief, willingness to test for the disease, being health worker, and government employee. A study in India also reported that frontline health workers are also at high risk of contracting the risk in addition to experiencing burnout, fear, anxiety, and depression among other psychological impacts.<sup>[20]</sup> Among the general population, Serafini *et al.* also reported similar psychological/mental health effect of stress, anxiety, depression, and frustration given the socioeconomic effect of the pandemic.<sup>[21]</sup> Health workers are at the forefront of the fight against COVID-19, and with the inadequate provision of personal protective equipment, the fear might be explicable. This might also be due to nonavailability of testing centers and delay in the release of results. The finding in this study is worse than that obtained during an epidemic in Australia where, though majority of the respondents have nonspecific psychological distress, only 34% have high psychological distress.<sup>[16]</sup> Furthermore, all occupational groups in this study had severe psychological effect which is different from findings in the study done on psychological effect of epidemic in Australia where only those whose incomes are linked to horse-related industry are linked to higher risk of high psychological distress.<sup>[16]</sup> No respondent in all the six states had mild psychological effect; all either had moderate or severe. This is similar to the findings in China where majority rated the psychological effect as moderate or severe.<sup>[22,23]</sup> This is an indication of the psychological burden associated with the COVID-19 pandemic. This study found that very common vulnerable factors to COVID-19 are hypertension, diabetes,



**Figure 2:** Pooled Gaussian distribution curve of psychological effect scores for the six southwest states of Nigeria, mean = 39.61, standard deviation = 5.597,  $n = 335$

asthma, cardiovascular diseases, and cancers. This might be due to increasing prevalence of these diseases in the general population.

## CONCLUSION AND RECOMMENDATIONS

COVID-19 pandemic has psychological sequelae among the majority of the study respondents in SW Nigeria. The psychological effect, as established by this study, ranges from fear of the disease, sense of being unsafe, and sense of neglect by the government. This disease also has a devastating economic effect on the population ranging from reduced income, difficulty in feeding the family, disturbance of leisure, and sense of insecurity. The major self-reported vulnerable factors for COVID-19 infection among the population include cardiovascular diseases, diabetes, asthma, and cancers. Health professionals and government employees are seven times more likely to develop severe psychological effect as a result of COVID-19.

The government should scale up awareness/health education campaign among the populace to reduce fear and anxiety against the disease. The government should provide social security facility to the populace due to reduced household income occasioned by the lockdown measures and closure of businesses. While financial incentives and stimulus package should be given to businessmen and women in the private sector, the payment of emoluments to civil servants should also be sustained by the government. The vulnerable individuals with comorbidities such as hypertension, diabetes, asthma, and cancers must take all precautionary measures to prevent COVID-19 while not neglecting the continued care for the morbid conditions. Governments should redouble efforts toward cushioning the psychological effect of the COVID-19 pandemic among health professionals through provision of enabling work environment, protective equipment, and financial incentives.

### Limitation to the study

Due to the government guidelines on COVID-19 with restriction on movement and gathering, the collection of data

**Table 3: Respondents' sociodemographic/vulnerability factors and psychological effect of COVID-19 (n=335)**

Variable	Psychological effect of COVID-19		Total	$\chi^2$	P
	Moderate (18- 34)	Severe (35- 51)			
Age (years)					
15- 24	21 (25.0)	63 (75.0)	84	8.435	0.077
25- 34	16 (15.5)	87 (84.5)	103		
35- 44	11 (10.5)	94 (89.5)	105		
45- 54	4 (11.4)	31 (88.6)	35		
≥55	2 (25.0)	6 (75.0)	8		
Sex					
Female	13 (12.1)	94 (87.9)	107	1.832	0.176
Male	41 (18.0)	187 (82.0)	228		
Religion					
Christianity	33 (23.2)	109 (76.8)	142	9.241	0.002*
Islam	21 (10.9)	172 (89.1)	193		
Occupation					
Health professional/worker	7 (14.3)	42 (85.7)	49	14.381 <sup>F</sup>	0.019*
Government employee	5 (8.5)	54 (91.5)	59		
Private employee	20 (15.2)	112 (84.8)	132		
Artisan	6 (23.1)	20 (76.9)	26		
Trader	0 (0.0)	16 (100.0)	16		
Unemployed	2 (22.2)	7 (77.8)	9		
Student	14 (31.8)	30 (68.2)	44		
State of resident					
Ekiti	5 (15.2)	28 (84.8)	33	11.968	0.035*
Lagos	17 (18.5)	75 (81.5)	92		
Ogun	14 (12.3)	100 (87.7)	114		
Ondo	6 (37.5)	10 (62.5)	16		
Osun	9 (25.0)	27 (75.0)	36		
Oyo	3 (6.8)	41 (93.2)	44		
Aspects of live affected negatively by COVID-19					
Family income					
Yes	36 (13.7)	226 (86.3)	262	5.032	0.025*
No	18 (24.7)	55 (75.3)	73		
Family feeding					
Yes	28 (11.8)	209 (88.2)	237	11.105	0.001*
No	26 (26.5)	72 (73.5)	98		
Vulnerability factors present in respondents					
Age ≥60 years					
Yes	0 (0)	0 (0)	0	2.090	0.148
No	54 (16.1)	126 (83.9)	335		
Health professionals					
Yes	29 (16.3)	149 (83.7)	178	0.008	0.927
No	25 (15.9)	132 (84.1)	157		
Willing to present for testing and treatment if having any symptom resembling that of COVID-19					
Yes	45 (14.6)	264 (85.4)	309	7.132 <sup>F</sup>	0.021*
No	9 (34.6)	17 (65.4)	26		
Travel history to country or areas within Nigeria with high incidence of COVID-19 in the last 6 weeks					
Yes	5 (33.3)	10 (66.7)	15	3.441 <sup>F</sup>	0.064
No	49 (15.3)	271 (84.7)	320		

$\chi^2$ : Chi-square test; F: Fisher's exact test; \*P<0.05

**Table 4: Predictors of severe psychological effect of COVID-19 (multivariable analysis)**

Variable	B	P	OR (95% CI)
Religion			
Christianity	-0.797	0.026*	0.451 (0.223- 0.909)
Islam (reference)			1
Occupation			
Health professional/worker	1.971	0.004*	7.178 (1.881- 27.388)
Government employee	2.079	0.002*	7.993 (2.173- 29.396)
Private employee	0.871	0.057	2.390 (0.976- 5.855)
Artisan	0.382	0.555	1.465 (0.413- 5.196)
Trader	19.877	0.998	4.292 (2.011- 35.957)
Unemployed	0.464	0.621	1.590 (0.253- 9.989)
Student (reference)			1
State of resident			
Ekiti	1.286	0.110	3.619 (0.749- 17.495)
Lagos	1.286	0.061	3.617 (0.944- 13.858)
Ogun	1.630	0.017*	5.105 (1.334- 19.544)
Ondo (reference)			1
Osun	1.038	0.165	2.822 (0.653- 12.194)
Oyo	2.384	0.007*	10.850 (1.897- 62.046)
Family income			
Yes	0.659	0.121	1.933 (0.840- 4.449)
No			1
Family feeding			
Yes	0.769	0.044*	2.157 (1.022- 4.551)
No			1
Willing to present for testing and treatment if having any symptom resembling that of COVID-19			
Yes	1.075	0.044*	2.931 (1.032- 8.327)
No			1

B: Coefficient of binary logistic regression, OR: Odds ratio, CI: Confidence interval, Predictive value: 85.4%

for this study was web based using social media groups. This method thereby allows participation to only those with access to social media. This might make the findings skewed toward the medium-to-high socioeconomic class group. However, attempts were made to reduce or circumvent this, through circulation of the questionnaire on social media platforms with cultural, educational, and social status diversity.

### What is already known on the topic?

- Globally, studies have reported negative socioeconomic and high psychological effect as a result of pandemic<sup>[16]</sup>
- The present COVID-19 pandemic has caused serious disruptions to global economic activities with loss of income and imminent global economic recession occasioned by the pandemic<sup>[21]</sup>
- Vulnerable populations, like the poor and those with comorbid health conditions, have been found to be more susceptible to the effects of pandemic.

### What this study adds?

- It assessed subjects from all the six states in SW geopolitical zone of Nigeria, being the region with the highest number of cases of COVID-19
- This study assessed the psychological and socioeconomic effect of COVID-19 in addition to establishing the prevalent vulnerability factors in the region

- This study established that majority of the people in the SW have their income negatively affected with resultant moderate and severe psychological effect, and being a health professional or a government employee are predictors of severe psychological effect.

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### Conflicts of interest

There are no conflicts of interest.

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