



Research article

Investigating the impacts of COVID-19 safety measures and related uncertainties among socially vulnerable groups in Lagos megacity

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ABSTRACT

The emergence of the unique coronavirus disease (COVID-19), associated safety measures and impacts have been experienced differently across various sociodemographic and livelihood groups. As a result of the impacts of the COVID-19 restrictions, this study examined experiences and livelihood uncertainties from socially vulnerable groups. One hundred and fifty responses (150) were recorded from residents in Iwaya, and Makoko areas within Lagos Mainland Local Government Area of Lagos state. Complete lockdown or stay-at-home orders, compulsory face masks in public spaces, curfews, physical and social distancing and restriction of inter-state movements are some of the precautionary/safety measures introduced by the Government and enforced by security agents. The findings show that curfews and restriction of inter-state movements were two of the safety measures that had no or reduced impact (p -values > 0.01) on the respondents' means of livelihood. Our results reveal that because a larger percentage of male participants are self-employed and owned personal businesses they were more affected by COVID-19 restrictions than females. 42.7% (64) of females and 57.3% (86) of males reported COVID-19-related anxieties and stress from fear of starvation, and contracting the virus, to impacts on money/finances, slow sales and businesses, food supply, job loss, erratic power supply affecting work from home options. 54.7% of respondents had more than 5 people living together, while 84.7% of housing types (128) are bungalows with several rooms inhabited by an average of three to four people per household. Increased stress, fear of hunger, loss of jobs and source of income were some of the negative impacts resulting from the introduction of the COVID-19 safety measures which adversely affected occupations like traders, people engaged in fishing activities, painters, carpenters, hairdressers and barbers, printers and bricklayers. Our work provides insights into the effects of the COVID-19-safety measures and subjective impact across vulnerable groups and occupations.

1. Introduction

On the 30th of January 2020, the World Health Organization declared the COVID-19 viral outbreak which originated in Wuhan province, China as a global pandemic. As of 7th October 2020, there were 59,583 confirmed cases and 7162 active cases with 51,308 recovered and 1,113 deaths (Coronavirus Resource Center, 2020; Nigeria Center for Disease Control, 2020). In efforts to contain the spread of this deadly virus, various protective and preventive safety measures outlined by the World Health Organization (WHO) have been imposed by the Federal and state governments. Yet, increased records of transmission are reported in densely populated cities across the country daily irrespective of precautionary and safety measures put in place by the local authorities. Generally, in Nigeria, daily active cases keep increasing with 118 newly confirmed cases as of 7th October 2020 (NCDC, 2020). Currently, Lagos

state, the largest growing megacity in Africa (United Nations World Population Report, 2019), has the highest number of confirmed cases (19, 692) and deaths (204) out of the thirty-six states (Figure 1) and closely followed by 5,758 confirmed cases from the Federal capital territory (Abuja) (NCDC, 2020).

Because the novel coronavirus and its disease (popularly referred to as COVID-19) is highly transmittable, safety measures like reduced face touching, washing of hands with soap and water, use of face masks, physical distancing, and extreme measures like stay-at-home directives have been imposed to contain community and nationwide spread. The lockdown initiative has to a large extent in different parts of the world led to a freeze in all aspects of people's economic, financial, social, educational, psychological, mental, emotional lives with present and futuristic consequences in developed and developing countries (Roy et al., 2020). While a developing country like Nigeria, is still struggling with high rates

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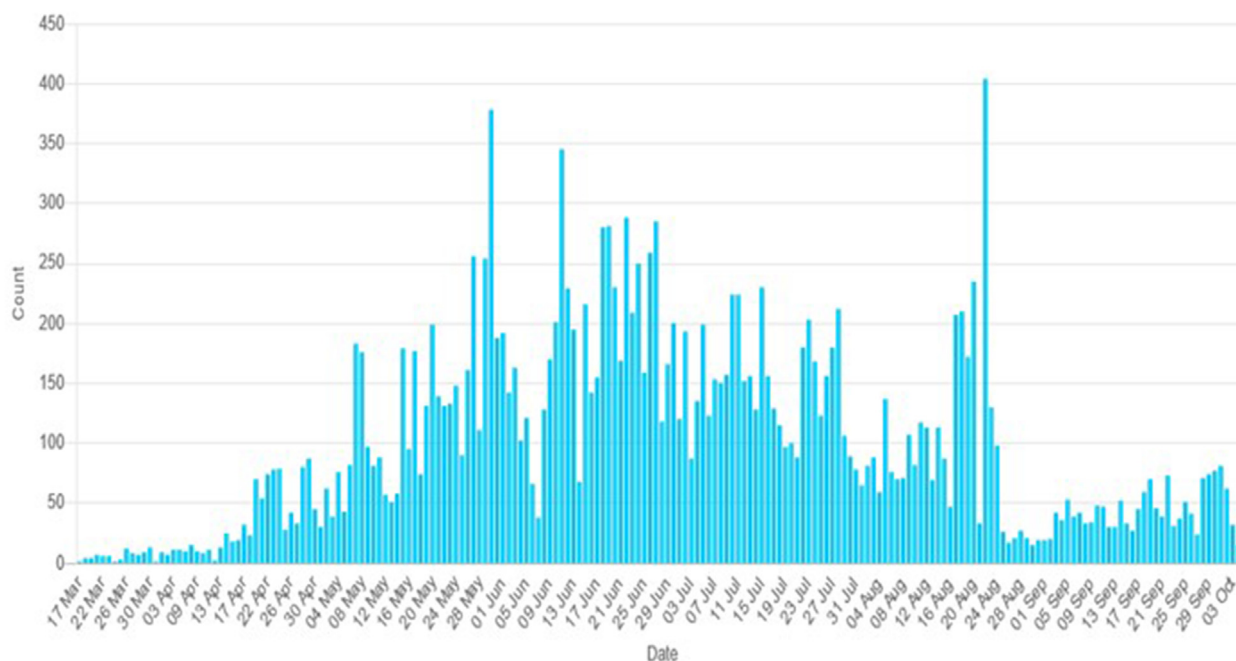


Figure 1. Epicurve graph of confirmed coronavirus cases in Lagos from the first date of recorded case 17th March 2020 till the 3rd of October 2020 (Retrieved from <https://covid19.ncdc.gov.ng/>).

of poverty, lack of adequate healthcare personnel and infrastructures, poor emergency and disaster response, poor governance, high rates of population growth, mortality, and fertility rates (Otitolaju et al., 2020); living situations in some communities worsens and invariably reduces the effectiveness of recommended safety measures needed to battle the spread of the COVID-19 virus.

Globally, vulnerable people living in urban informal settlements generally referred to as ‘slums’ or ‘squatter settlements’ or ‘urban villages’ already suffer from numerous and never-ending existing vulnerabilities and are areas of concentrated disadvantage; housing poor people and worst buildings (Vlahov et al., 2007; UN-Habitat, 2003; Mamun et al., 2020; Mishra et al., 2020). As 50% of the World’s population (205,323,504) continue to live in extreme poverty: below \$2 (\$1.90) per day (Crespo Cuaresma et al., 2018), a surge in population growth rate around the world has been predicted and will quadruple before 2030 (United Nations World Population Report, 2019). The challenges of rapid population growth and urbanization accompanied by inadequate housing infrastructures, lack of access to basic and essential amenities, increased urban poverty and squatter settlements, etc. is likely to further widen the gaps between advantaged and disadvantaged groups and communities. The coronavirus pandemic increases uncertainties and vulnerabilities to livelihood and economic opportunities for the “*extremely poor and socially excluded people*” (Iwuoha and Aniche, 2020).

According to *The Global Report on Human Settlements* (UN-HABITAT, 2004), between 40% and 70% of the population in African cities live in squatter settlements or urban villages. The Lagos Megacity in Nigeria is an example of such cities. The Lagos Megacity is one of the highly populated and fastest-growing megacities in West Africa and the world, with nearly 70% of its urban population living in slums (Adelekan, 2010). Lagos slums are characteristic of communities bedeviled by deplorable conditions from the poor structural quality of housing, overcrowding, unemployment, lack of schools, lack of health centers, waste disposal, and sewage tanks, inadequate access to safe water, poor sanitation, insecurity, etc (UN-HABITAT, 2004). The sustainability of cities in an era of environmental, climate, and population change especially in the developing world is fraught with recurrent challenges to human resources and infrastructures. While the role of cities is continually being investigated in addressing the transmission pathways of the coronavirus

and COVID-19 disease and the effectiveness of safety measures (Iwuoha and Aniche, 2020; Mishra et al., 2020), it is crucial to explore the impacts of the preventive measures and examine the stress and uncertainties among varying sociodemographic groups and livelihood sources in disadvantaged areas (Mamun et al., 2020).

Unfortunately, since the beginning of the pandemic in Lagos, there has been panic and unnecessary price spikes in face masks, hand gloves, and sanitizers which has led to a scarcity of these safety kits in the markets and for healthcare workers (Ogoina, 2020). Recognizing that most slum dwellers are struggling to make ends meet, this situation would have created anxiety, stress, fear, confusion, and a state of helplessness (Roy et al., 2020). Alarming, the risks to these already vulnerable group (Corburn et al., 2020) from the impacts of the deadly coronavirus could be devastating and is further exacerbated by house occupancy and space proximities (high incidence of squatting in closed spaces), poor sanitation, hygiene and water shortages which are some of the resources needed to perform basic life-saving exercises such as handwashing routines (Iwuoha et al., 2020). Added to non-exhausting problems of inadequate or non-existent power supply, water shortages, poor sanitation, inadequate shelter, and unfavorable living conditions, high rates of unemployment, lack of schools, absence of health care facilities, increased medical quacks, and occurrence of diseases as a result of rural-urban migration (Elias et al., 2017), is the unbalanced fear of hunger and contracting the COVID-19 disease. It is therefore pertinent to examine the impact of the protective/preventive measures and changing stress levels. Therefore, this study seeks to:

- I. Highlight the impacts of the COVID-19 restrictions and related livelihood uncertainties among socially vulnerable groups
- II. Identify the safety (precautionary) COVID-19 measures that had significant impact on livelihood and economic activities

2. Study area

The highest number of recorded cases of the coronavirus in the state are three local councils within the metropolitan areas of Lagos state. These councils are regions where informal housing settlements and communities are concentrated. They include the Lagos Mainland, Eti-

Osa, and Mushin Local government councils. The informal settlements used for the study are situated in Lagos Mainland local government area of Lagos state (Figure 2). The Local government area is home to the nine most degraded slums located along the fringe of a coastal lagoonal system, the Lagos Lagoon, Nigeria (Adejumo, 2002). Over the years, the Lagos lagoon waterways have evolved from frontier fishing villages to become one of the key transportation networks (Adejumo, 2002; BBC news, 2010; Olumuyiwa et al., 2014). Uncontrollable and largely unplanned urban growth in the Lagoon coastal fringe has resulted in conversions of the natural spaces to housing infrastructures. The area is now characterized by environmental and man-made problems such as flood hazards, erosion, poor sanitation, marine pollution, etc (Adelekan, 2010).

3. Materials and methods

The study was done through the administration of a self-constructed questionnaire developed using google forms to randomly selected members of the communities. Ethical clearance for questionnaire administration was granted by the Human ethics committee of the Geography Department University of Lagos. The research team comprising of the principal investigators (four) and research assistants (three) through the use of their phones and tablets conducted face to face interviews using the google forms. The google form questionnaire was shared to field agents through a link and participants were made to provide consents before any response was recorded. Data collection

commenced on 4th August and ended on September 30th, 2020. One hundred and fifty responses (150) responses were recorded from residents in Iwaya, and Makoko areas within Lagos Mainland Local Government Area of Lagos state. COVID-19 safety measures were strictly adhered to during interview sessions. The questionnaires were administered to respondents in the study area during a temporary ease of lockdown. Necessary protective pieces of equipment were worn by field agents to prevent disease transmission while on the field. Due to security reasons and transportation issues, a limited number of people living in houses on the lagoon were interviewed.

The sections in the google form survey addressed socio-demographic characteristics of the respondents, perception, and awareness of the coronavirus disease (hereafter referred to as COVID-19), stress-related problems, safety measures and impacts, and various challenges experienced as a result of the current COVID-19 adjustment. Gender, marital status, age, occupation, education status, household size, and housing types are some of the socio-demographic variables included in the study. The awareness section of the online survey covered information sources (and updates) of the virus spread, knowledge about the symptoms and transmission pathways. Responses addressing perception and stress were subjected to parametric and non-parametric statistical tests while a descriptive analysis is provided to examine the sociodemographic characteristics of the vulnerable groups. Data are presented in tables and charts in a bid to investigate the dimensions of uncertainties amidst the fear of COVID-19 transmission in the selected study sites.

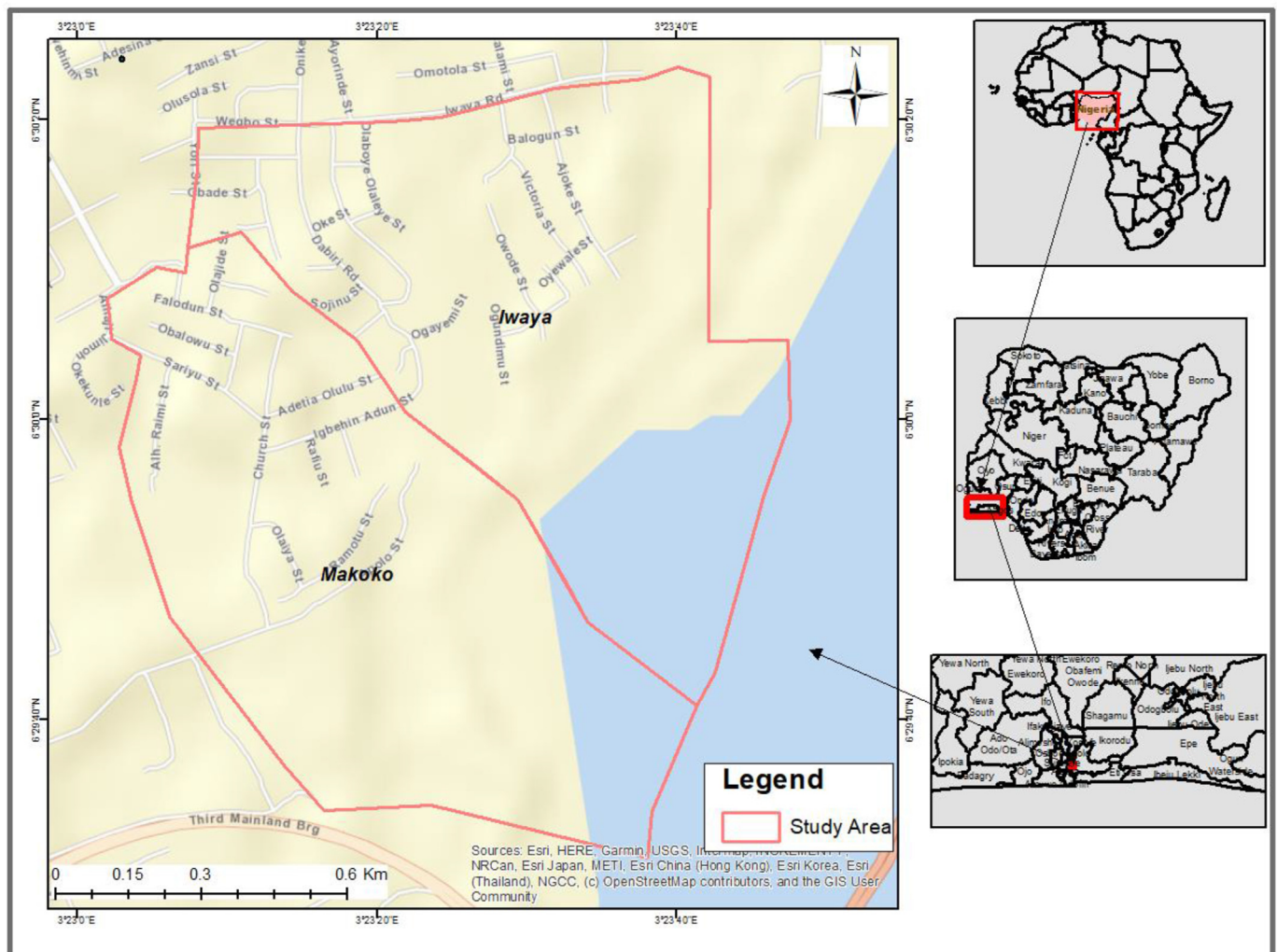


Figure 2. Study area showing Makoko and Iwaya Communities in Lagos Mainland local government area of Lagos state, Nigeria.

4. Results and discussion

4.1. Socio-demographics of respondents

A total of 150 respondents participated in the study (Table 1). 42.7% (64) Females and 57.3% (86) males participated in the study. A larger proportion of vulnerable groups lived in Makoko area 105 (70%), followed by Iwaya 42 (28%) and Makoko house on the lagoon (1 female and 2 males, 3: 2%). 80.7% of respondents interviewed are married, single (8.0%) and divorced (3.3%). While a higher proportion of the respondents did not have formal education (42.7%), 18.7% had attended the foundation primary school and were able to read and write simple sentences.

The number of people in households and houses ranged from 2 to 36 people per household. 54.7% of respondents had more than 5 people living together, while 2% of the respondents reported 2 people living in a household. 84.7% of housing types (128) are bungalows with several rooms inhabited by an average of three to four people per household. These types of housing commonly referred to as “face-me-I-face-you”, are common in low-income communities and are generally characterized by overcrowding, poor house spacing, poor sanitation and hygiene, etc. (Mabogunje, 1990; Olajide et al., 2018). Problems of poor housing and spacing studied in slums in Lagos, Nigeria revealed the Inefficacy of physical and social distancing policies (Iwuoha and Aniche, 2020). Respondents in our study also emphasized the impracticability of physical

Table 1. Descriptive statistics for sociodemographic characteristics of respondents.

Variables	Sub-variables	Frequency (N)	Percentage (%)
Community	Iwaya	42	28.0
	Makoko	105	70.0
	Makoko house on Lagoon	3	2.0
Gender	Female	64	42.7
	Male	86	57.3
Age	18–30 years	15	10.0
	31–40 years	70	46.7
	41–60 years	63	42.0
	61 years and above	2	1.3
Marital status	Divorced	5	3.3
	Married	121	80.7
	Separated	4	2.7
	Single	12	8.0
	Widowed/Widower	8	5.3
Education level	No formal education	64	42.7
	Primary school	28	18.7
	Secondary school	46	30.7
	Tertiary education	12	8.0
Household occupancy ratio	2.00	3	2.0
	3.00	6	4.0
	4.00	26	17.3
	5.00	33	22.0
	6.00	44	29.3
	7.00	31	20.7
	8.00	4	2.7
	10.00	2	1.3
	36.00	1	.7
Housing types	Bungalow; One room apartments (face-me-I-face-you rooms housing several families)	128	84.7
	Storey building (several rooms)	9	6.0
	Detached Flats	13	8.7
Total		150	100.0

distancing and proper hygiene practices due to the poor living conditions, water problems and lack of spaces in their types of houses.

4.2. Perception of COVID-19 and associated safety measures among the socially vulnerable groups

While 100% of the respondents are aware of the symptoms of the virus and possess basic knowledge of the disease and related communication pathways, only 84% strongly believe that it is real and in Nigeria. An analysis of our data shows that the lack of belief cuts across the different communities and sociodemographic groups captured in the study. 4.5% of people living in Makoko house on Lagoon (3) did not believe that the virus is in Nigeria. A lower proportion of individuals in the Iwaya community (16.7%) are aware of the COVID-19 disease around different parts of the world but did not believe its existence in Nigeria. This number of people are, however, relatively low as compared to a larger proportion (36.9%) of those in the communities that believe. The percentages of people living in Makoko who believe and do not believe the virus is real and in Nigeria are relatively close, with 63.1% (52) and 78.8% (52), respectively. The study found that a higher proportion of individuals within all age groups are aware of the symptoms of the virus and believe that the virus is in the country. The respondents indicated various sources of information about the virus from several online media and verbal forms (WhatsApp, Twitter, family and friends) to print media (newspapers and magazines). Daily updates and information provided from the World Health Organization (W.H.O), international and state media and local groups have also increased awareness and sensitization about how the virus can be transmitted from one person or host to another. There is adequate knowledge about the various preventive measures to stop or reduce the spread of the virus. Some of the preventive measures listed by individuals and groups of people include (see Figure 4):

- I. Avoid touching the face (eyes, mouth and nose)
- II. Avoid contact with sick persons
- III. Avoid shaking hands
- IV. Social distancing
- V. Physical distancing
- VI. Avoid large gatherings
- VII. Cover mouth when sneezing and coughing
- VIII. Disinfect surfaces and surroundings
- IX. Wash hands regularly for longer than 2 min
- X. Wash hands with soap and water
- XI. Regular use hand sanitizers
- XII. Stay-at-home if sick or having symptoms of the illness

4.3. Impacts of restrictions on livelihood

Global challenges to mental health documented from the COVID-19-related restrictions range from loneliness, depression, anxiety, trauma, fear of job loss and stress (Islam et al., 2020; Perri et al., 2020; Dai et al., 2020; Ahmed et al., 2020; Malathesh et al., 2020; Roma et al., 2020). This is similar to the results of changing stress-related levels among the marital, gender and occupation groups in our study. Some of the effects ranged from positive to negative and no change depending on the demographic group analyzed. In this study, more males than females were affected by COVID-19 restrictions. 42.7% (64) of females and 57.3% (86) of males reported impacts such as increased stress, loss of jobs, Salary slash, Slow sales, no pay, shutting down of businesses, learning from home, no change, etc. The majority of respondents stated that it had brought loss and increased helplessness within their homes and neighborhoods, others reported the impacts as being similar to everyday situations. Of the 150 respondents who were involved in the study, only 3 people reported no impact caused by restrictions while a larger proportion, 147, attested to having been impacted by the restrictions. A higher proportion of females (23.4%) and males (31.4%) listed negative impacts

from loss of a job, salary slash, no pay to slow sales while out of the 57.3% of male respondents, 32.2% who are married highlighted increased stress and uncertainties relating to loss of jobs, slow sales, shut down of businesses, salary slashing and instances of “no work, no pay”. 4.7% of males specifically reported shutting down their businesses due to the COVID-19 restrictions.

Epidemic outbreaks and diseases have been recorded to affect various aspects of human health - physical, emotional, mental health, even if they are seasonal (Roy et al., 2020; Olibamoyo et al., 2020). Participants reported increased anxiety, stress, and other forms of physical hardships. Stress levels differed between communities and among marital groups, gender, and age levels. Table 2 reveals that the negative impacts were experienced more amongst the male population who are married and widowed and females across all the marital groups and majorly between the ages of 31–60 years. On a community case-by-case basis, negative and positive stress levels recorded from people living in Makoko were not significant. This is because out of the 105 participants from the community, 78.9% (56) indicated their stress levels as lower than usual while 62% (49) had recorded higher than usual stress levels. However, a higher percentage of people in Iwaya 27 (34.2%) out of the total population (42) recorded increased stress levels during the implementation of the toughest restrictions while only 15 (21.1%) reported lower than usual stress levels.

The three (3) participants from Makoko house on Lagoon attributed their stress levels which were higher than usual (3.8%) to fear of the unknown in an already vulnerable environment, scarcity of financial resources to provide for self and family, increased costs in transportation, essential services (water supply), food shortages, etc. The female respondent who is a widow and petty trader in one of the Government primary schools lamented,

“The responsibility of providing for my family of four lies on me. After my husband’s death two years ago, I started selling biscuits, sweets and stationery in the primary school that is 15 min away from my home. With the emergence of COVID-19 and the lockdown measures, my children and I had to resort to buying food items on credit and eating from hand to mouth” (She smiles when she says)....” I am delighted the Government has now introduced curfews and will hopefully re-open schools so my trading can continue”.

Another male participant living in Iwaya, a 21-year-old student in one of the higher institutions commended the action of all the tiers of Government while complaining about the incessant power supply and poor internet facilities which are necessary to cope with the lockdown.

“While I support the introduction of the lockdown measures to curb the spread of the deadly virus, I believe incentives should be provided to people who are currently staying or working at home. The off and on of the power supply, noise pollution from electrical generators and high cost of internet facilities are not helping people. If this continues, individuals and families would be more afraid of depression, social exclusion, and loneliness and at risk of mental illness rather than fear contacting the virus”.

One of the 65-year-old male respondents complained of loneliness, boredom and lack of affection due to reduced visits from family members, especially grandchildren. He complained,

“I missed having my grandchildren’s heartfelt hugs and their parents’ short visits. Even though we spoke regularly via phone calls and WhatsApp almost every day during the months of lockdown, it never felt the same as seeing them. The lockdown months were the hardest, loneliest and saddest of my life after my wife’s death 10 years ago”.

From our study, the participants’ COVID-19-related stress revolved around the fear of contracting the virus, money/finances, slow sales and businesses, food supply, losing job, erratic power supply affecting work from home options. Coupled with the fear of COVID-19, 1.3% of the older adults 61 years and above complained of touch and lack of affection from loved ones (Whitehead and Torossian, 2020) rather than finance or slow sales. Barbers, carpenters, electricians, drivers that were interviewed complained about the disruption and total shutdown of their small businesses during the state and country lockdown. Barbers and hairdressers commented from personal conversations that they still went on to conduct businesses within their community bubbles and were quick to point out that during those visits face masks were worn. A hairdresser remarked,

“I had to feed my family. The option of staying at home doing nothing and waiting for government’s relief items were not on my list. I set up

Table 2. Stress level during the early months of COVID-19 safety enforcement (lockdown).

Variables		Stress level during COVID-19				Total	
		Higher than usual		Lower than usual		Frequency	Percentage (%)
		Frequency	Percentage (%)	Frequency	Percentage (%)		
Community	Iwaya	27	34.2	15	21.1	42	28
	Makoko	49	62	56	78.9	105	70
	Makoko house on Lagoon	3	3.8	0	0	3	2
Gender	Female	36	45.6	28	39.4	64	42.7
	Male	43	54.4	43	60.6	86	57.3
Marital Status	Divorced	3	3.8	2	2.8	5	3.3
	Married	66	83.5	55	77.5	121	80.7
	Separated	3	3.8	1	1.4	4	2.7
	Single	5	6.3	7	9.9	12	8
	Widowed/Widower	2	2.5	6	8.5	8	5.3
Age	18 - 30 years	9	11.4	6	8.5	15	10
	31 - 40 years	44	55.7	26	36.6	70	46.7
	41 - 60 years	24	30.4	39	54.9	63	42
	61 years and above	2	2.5	0	0	2	1.3
Education level	No formal education	33	41.8	31	43.7	64	42.7
	Primary school	4	5.1	24	33.8	28	18.7
	Secondary school	35	44.3	11	15.5	46	30.7
	Tertiary education	7	8.9	5	7	12	8
Total		79	100	71	100	150	100

a small area within my compound, moved some of my mobile equipment and went to work. I was more terrified of hunger than COVID-19”.

An electrician lamented,

“Unlike some people that can work from home, I need to visit houses, offices or companies to do my electrical works. This COVID-19 has really destroyed a lot of my plans for the year. All I pray is that immediately the lock down is eased, trading can start, and businesses would boom....but I doubt it”. We are left helpless to be catered for by a Nigerian Government that joke with citizen welfare”.

4.3.1. Relationship between stress level and COVID-19 safety measures

To examine the efficacy of the various COVID-19 restrictions (from wearing face masks to lockdowns) on the vulnerable groups identified in this study, participant responses to questions about which Government measure had the least to most impacts on their livelihoods were subjected to statistical tests. Our analysis explored the data assuming the safety measures as dependent variables. The data was then subjected to a goodness-of-fit test. The goodness-of-fit tests were performed using the tests of normality and outliers. While testing for normality, the dependent variables were revealed as not normally distributed with p-values less than .05 interpreted as significant from the Shapiro-Wilk tests of normality (p-values = 0.000 < 0.05 = α). The box plots also revealed the absence of outliers which supported the use of a non-parametric test rather than a parametric test.

Therefore, to determine which of the safety (precautionary) measures had a reduced impact on respondents’ means of livelihood and economic activities, the Kruskal Wallis non-parametric test was used (see Table 3). The null hypothesis that the protection measures had no impact on livelihood and economic activities was rejected in three scenarios. With p-values < 0.01, the use of masks in public (χ² (1) = 7.037, p = 0.008), social distancing (χ² (1) = 7.864, p = 0.005) and Lockdown (χ² (1) = 7.321, p = 0.007) had a significant impact on businesses, daily lives and means of livelihood. The analysis also shows that safety measures such as restriction of inter-state movements and curfews (p-values > 0.01) had no significant impact (or reduced) on livelihoods. This may be due to temporariness of the measures which entails moving freely but at specific times and not a total halt of social relations, or goods and service exchange.

4.4. Respondents’ solutions and strategies to improving people’s safety while addressing livelihood problems

In this era of COVID-19, suggestions were provided to the government by respondents to assist in alleviating hunger and economic hardships as well as ensuring safety. The solutions include distribution of masks to communities, re-opening and enforcing physical distancing measures in public places such as malls, restaurants, markets etc., creation of more hand washing facilities in neighborhoods, high schools and other public spaces to encourage the habit of washing hands. A number of respondents also mentioned a rejuvenation of the public transport. The present arrangement currently allows close contact between two or more

Table 3. Kruskal wallis test statistics.

	Use of nose masks in public	Social distancing	Restriction of inter-state movements	Curfews	Lockdown
Chi-Square	7.037	7.864	1.613	2.837	7.321
Df	1	1	1	1	1
Asymp. Sig.	.008	.005	.204	.092	.007

Bonferroni correction: p-values ≤ 0.01.

people. Participants also addressed the need for affordable hand sanitizers, food packs and relief items for families adversely affected by the pandemic, provide accessible loans with low interest rates to business owners and entrepreneurs, enforce the use of face masks in public spaces, support advertisements and continuous sensitization campaigns in all neighborhoods. Most importantly, respondents registered the need to protect and provide adequate support to frontline health workers and their families who are more susceptible to contacting the virus.

5. Conclusion

The COVID-19 pandemic has added to problems of unfavorable living conditions, high rates of unemployment and fear in socially vulnerable groups living in vulnerable communities. This study examined stress and livelihood uncertainties resulting from the COVID-19 restrictions among people dependent on daily proceeds from personal businesses. Complete lockdown or stay-at-home orders, compulsory face masks in public spaces, curfews, physical and social distancing and restriction of inter-state movements are some of the precautionary/safety measures introduced by the Government and enforced by security agents. Curfews and restriction of inter-state movements were two of the safety measures that had no or reduced impact on the means of livelihood. Increased stress, fear, loss of jobs and income were some of the negative impacts resulting from the introduction of the COVID-19 safety measures while adversely affected occupations were traders, people engaged in fishing activities, tailors, painters, carpenters, hairdressers and barbers, printers and bricklayers. As most research on COVID-19 transmission in slums have addressed the impracticalities in implementation and the unsuccessfulness of safety measures because of the living conditions and economic situations, the present study provides insights into the effects of the COVID-19-safety measures and subjective impacts across vulnerable groups and occupations. While the impacts of COVID-19 will still be felt years to come, our research further highlights increased uncertainty of livelihood and stressed conditions among already vulnerable groups in the society.

Declarations

Author contribution statement

Jokotola Omidiji: Conceived and designed the experiments; Performed the experiments; Analyzed and interpreted the data; Contributed reagents, materials, analysis tools or data; Wrote the paper.

Samuel Udofia; Busayo Fashoto: Performed the experiments; Analyzed and interpreted the data; Contributed reagents, materials, analysis tools or data; Wrote the paper.

Amidu Ayeni: Analyzed and interpreted the data; Contributed reagents, materials, analysis tools or data; Wrote the paper.

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Data availability statement

The authors do not have permission to share data.

Declaration of interests statement

The authors declare no conflict of interest.

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