

Interrogating the Effects of COVID-19 Pandemic on Livelihoods Demographics and Health of Residents of South-East Nigeria

Ogadinma Ikonne*, Amaugo Ijeoma Mercy

Department of Sociology, Abia State University, Uturu, Nigeria

ABSTRACT

This study focused on the effects of COVID-19 pandemic on livelihoods, demographics and health of residents of South-East Nigeria. The study specifically investigated: The effects of COVID-19 pandemic on livelihoods; demographic conditions; and health conditions of residents in South-East Nigeria; and how the livelihoods of such residents can be improved. It was hypothesized that “there is a significant relationship between COVID-19 lockdown and increase in fertility among couples; and that there is a significant relationship between COVID-19 pandemic and access to healthcare facilities. A cross-sectional survey design was adopted. Data were collected through questionnaire and FGD (Focus Group Discussion). Multi-stage sampling was used to select 865 respondents for quantitative study while 12 FGDs were conducted for the qualitative data. The quantitative data were processed using SPSS Version 20.0 and analyzed using descriptive and inferential statistics. The qualitative data were analyzed with content analysis. The hypotheses were tested using ANOVA. It was found that the pandemic affected the livelihoods of half of the south eastern Nigeria’s residents, and a majority of them could easily pay their children’s fees before COVID-19 than after; fed better before COVID-19 than after; had a better income before COVID-19 than after; were bereaved because of the poverty orchestrated by COVID-19; had their movement curtailed; neglected the use of contraceptive; and was healthier before COVID-19 than after. There is a significant increase in fertility due to COVID-19 lockdown at $p=0.012$; and a significant relationship between outbreak of COVID-19 and lack of access to healthcare facilities at $p=0.001$. It was therefore recommended that awareness creation about opportunities that COVID-19- orchestrated changes have brought in Southeast should commence without wasting time.

Keywords: COVID-19 pandemic; Livelihoods; Demographics; Health; Residents

INTRODUCTION

The COVID-19 pandemic, caused by the novel coronavirus SARS-CoV-2, emerged in late 2019 and swiftly evolved into a global health crisis with unprecedented social, economic, and public health ramifications [1]. The pandemic disrupted societies worldwide, profoundly impacting various aspects of daily life, and challenging the resilience of communities and healthcare systems [2].

Nigeria, a populous African nation, was not immune to the ravages of the pandemic. The country recorded its first confirmed COVID-19 case in late February 2020 (“Nigeria Centre for Disease Control and Prevention,” n.d.) [3]

The Nigerian government, both at the federal and

state levels, responded with a series of containment measures, including lockdowns, travel restrictions, and the enforcement of public health guidelines. These measures were implemented to curb the spread of the virus, protect public health, and manage the healthcare system’s capacity. However, these measures had far-reaching consequences on various aspects of life in Nigeria.

The South-East region of Nigeria, comprising Abia, Anambra, Ebonyi, Enugu, and Imo states, is a densely populated and culturally vibrant region known for its thriving businesses and strong community ties. Like the rest of the country, the South-Eastern states experienced the impact of the COVID-19 pandemic. This study seeks to interrogate the effects of the COVID-19 pandemic on the livelihoods, demographics, and health of the

Correspondence to: Ogadinma Ikonne, Department of Sociology, Abia State University, Uturu, Nigeria, E-mail: ogadinma.ikonne@abiastateuniversity.edu.ng

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residents of South-East Nigeria. It is prompted by the recognition that the pandemic's implications extend beyond the immediate health crisis, affecting multiple dimensions of society.

On livelihoods, the lockdowns and containment measures disrupted economic activities, particularly small businesses, informal sector enterprises, and daily wage laborers. These disruptions in some other western societies have been connected to income losses and economic hardship for many households [4].

Also, on demographics, precisely in China, a study have shown that the pandemic affected vulnerable populations differently, including the elderly, children, and those with pre-existing health conditions [5]. Therefore, understanding the demographic impact of COVID-19 is essential for informed policy responses, especially for specific regions such as the south east Nigeria. While on health, the pandemic strained healthcare systems, leading to challenges in accessing healthcare for non-COVID-19-related issues. The virus also underscored the importance of robust healthcare infrastructure [6].

This research therefore shall provide a comprehensive analysis of the pandemic's effects in South-East Nigeria, taking into account the unique social, economic, and demographic characteristics of the region. It seeks to know how the livelihoods of the people have been affected by the pandemic, and what coping mechanisms the residents have employed; the demographic patterns of COVID-19 cases and impacts, and how these patterns evolved over time; the state of healthcare infrastructure in the region, and how well it responded to the healthcare needs arising from the pandemic. This will aid in the understanding of the COVID-19 pandemic's multifaceted consequences, providing insights for local and national policymakers, public health authorities, and civil society organizations to design more targeted and effective interventions.

Statement of the problem

The demographic and health conditions of the South-East Nigeria have been on the lowering tempo with a constant decline of livelihoods as there are not any or enough socioeconomic provisions that could help in lifting many of the households members off the poverty line. Southeast Nigeria which is made up of five (5) Igbo speaking dominated states are basically civil service and business occupational areas whose workers are barely paid by the government, in turn creates a vicious circle of poverty ravaging populace. Therefore, it is an increasing challenge that calls for urgent attention and appraisal, as it evident that public mega projects and higher public investments are absent, thereby leaving economic growth too low in South-East Nigeria, of which is the relevant reason for this study.

As important as health conditions, demographics, and households livelihood are to life, poverty still remains a hindrance to the actualization of these basic necessities, which becomes a multiplying social problem because an individual's income level, determines to what extent he or she could access good health facilities, feed well, afford good shelter, be educated, and achieve other social expectations in order to secure a good living condition. As a challenge people such as youth and females hardly have the required resources to take care of themselves and their households.

The demanding peculiarity of this issue calls for a critical analysis or appraisal of the implications of COVID-19 pandemic on the indigenes of south-east Nigeria, with particular reference to their livelihoods, demographic and health conditions. It is a problem that needs to be urgently addressed, as it is the nature of negative social issues to multiply adversely if neglected overtime.

Objectives of the study

This study is guided by the following specific objectives:

1. To find out the effects of COVID-19 pandemic on the livelihoods of residents of South-East Nigeria.
2. To ascertain the effects of COVID-19 pandemic on the demographic conditions of residents of South-East Nigeria.
3. To determine the effects of COVID-19 pandemic on the health conditions of residents of South-East Nigeria.
4. To find out how the living condition (livelihoods) of residents of South-East Nigeria can be improved.

Research questions

The following research questions will be posed for this study:

1. What are the effects of COVID-19 pandemic on the livelihoods of residents of South-East Nigeria?
2. What are the effects of COVID-19 pandemic on the demographic conditions of residents of South-East Nigeria?
3. What are the effects of COVID-19 pandemic on the health condition of residents of South-East Nigeria?
4. How can the living conditions (livelihoods) of residents of South-East Nigeria be improved?

Theoretical framework

Theories of impact of population growth on society” by Jack Goldstone and Stephen Sanderson: This paper is explained using the combination of theories of “impact of population growth on society” by Jack Goldstone and Stephen Sanderson because they are the major theories that try to place demographic events and behaviour in the context of other global change especially political change, economic development and increase in cities [7]. Weeks holds that reformulations of the demographic transition perspective have emphasized its evolutionary character and have shown that the demographic transition is not one monolithic change, but it encompasses several interrelated transitions: A decline in mortality will almost necessarily be followed by a decline in fertility, and by subsequent transitions in migration, urbanization, the age structure, and the family and household structure [7].

Jack Goldstone theory posits that population growth is a precursor of change in the modern world. Of course the issues of declined households livelihoods, unemployment, and increased labour force especially those that are unemployable and deteriorated health conditions are all contemporary issues of change that resulted from population growth. Even the issue of COVID-19 pandemic has been attributed to population growth as so many accounts have reported that the novel corona virus was a weapon for population control. Goldstone argues that population growth in the presence of rigid social structures produces dramatic political change [7]. Some of

the political changes could be in the area of non-implementation of policies that favour job creation and economic empowerment as we have in Nigeria in this COVID-19 pandemic era. In some societies with no real opportunities for social mobility, Goldstone holds that population growth, which initially increases the number of young persons, leads to disaffection and popular unrest and creates a new cohort of young people receptive to new ideas [7]. This may definitely result in rebellion and if care is not taken revolution. For example, look at the cases of Niger Delta Avengers, Boko Haram, Bandits, end-sars campaigns, agitations for referendum and independence, kidnapping, and so on in Nigeria today, producing situations of social unrest with the use of sophisticated weapons and thereby escalating loss of livelihoods and poverty levels in the country in this COVID-19 era.

Sanderson and Weeks promotes the idea that population growth has been an important stimulus to change throughout human history especially since the agricultural revolution [7,8]. He argues that "had Palaeolithic hunter-gatherers been able to keep their population from growing, the whole world would likely still be surviving entirely by hunting and gathering". Instead population growth generated agricultural revolution and then the industrial revolution. This situation increases social complexities and the rise of cities thereby making the global population largely urban. For example, the increase in urban population in Nigeria has a profound impact in the rate of unemployment, poor man-power development, underemployment deteriorated livelihoods, wars, crises, internal displacement, in the COVID-19 pandemic Nigeria.

Hypotheses

The following hypotheses were formulated for this study:

1. There is a significant relationship between COVID-19 lockdown and increase in fertility among couples in South-East Nigeria.

2. There is a significant relationship between COVID-19 pandemic and access to healthcare facilities in South-East Nigeria.

MATERIALS AND METHODS

Research design

The study will adopt a cross-sectional survey design. This design will allow the researchers study a large population at a relatively less time, and it will guarantee the generation of extensive data (quantitative and qualitative) for the study.

Area of the study

The study is carried out in South-east Nigeria, one of the six geopolitical zones in the country. Other geopolitical zones include: North-east, North-west, North-central, Southwest and South-south. South-east Nigeria presently consists of five states viz: Abia, Imo, Ebonyi, Enugu and Anambra States; and 95 Local Government Areas which cut across the five states (Abia State 17 LGAs, Imo 27, Ebonyi 13, Enugu 17, and Anambra 21). The major language of the region is Igbo.

Population of the study

South-East Nigeria based on 2006 National Population and Housing Census has a total population of 16,395,555 people (male 8,184,951 and female 8,210,604). The population was projected to 2021 as follows in Table 1.

The target population of the study is 3,904 being the population of some four (4) relevant population categories for this study which cut across the study area. The population categories are as follows: The women, the men, the youths, and opinion moulders (e.g. health workers, teachers, religious leaders and market group leaders). The target population is shown in Table 2.

Table 1: Projected population of South-East Nigeria by gender and states.

States	2006 Male Population	2021 Projected Male Population	2006 Female Population	2021 Projected Female Population	2006 Total Population	2021 Projected Total Population
Abia	14,30,298	22,94,151	14,15,082	22,69,745	28,45,380	45,63,896
Anambra	21,17,984	33,97,177	20,59,844	33,03,922	41,77,828	67,01,099
Ebonyi	10,64,156	17,06,871	11,12,791	17,84,880	21,76,947	34,91,751
Enugu	15,96,042	25,59,999	16,71,795	26,81,504	32,67,837	52,41,503
Imo	19,76,471	31,70,195	19,51,092	31,29,487	39,27,563	62,99,682
Total	81,84,951	1,31,28,392	82,10,604	1,31,69,539	1,63,95,555	2,62,97,931

Note: NPC: National population commission (2010). 2006 population and housing census priority table volume iv. Population distribution by age and sex (state and local government area). Table DS5, Abuja: NPC.

Table 2: Target population for the study.

Population categories	LaguruUbakala community Abia State	Ihube community Imo State	Isiagu community, Ebonyi State	Total
The Men	200	350	230	780
The Women	350	415	400	1,165
Opinion Moulders	80	82	67	229
The Youths	500	680	550	1,730
Total	1,130	1,527	1,247	3,904

Note: Official records/registers of the men’s group, the women’s group, primary health centers/hospital/clinics, community unions, tradition rulers/titled men/women, market groups, schools, and the youths in the study area.

Scope of the study

The study will be limited to the effects of COVID-19-pandemic on livelihoods, demographics and health of residents of South-East Nigeria focusing on Abia, Imo and Ebonyi States. The main purpose of their inclusion was purely on random selection in which the five states of South-East Nigeria were listed and three picked without replacement.

Sample size

The sample size will be 865 residents of south-East Nigeria. This will be statistically generated by using Taro Yamane statistical method of determining sample size as thus:

$$n = \frac{N}{1 + N(e)^2}$$

Where: n=Sample size; N=Target population; e=error of sample (it could be 0.10 down to 0.01, but in this work, 0.03 was used) and 1=Unity or constant.

Therefore;

$$n = \frac{3904}{1 + 3904(0.03)^2}$$

$$n = \frac{3904}{1 + 3904(0.00009)}$$

$$n = \frac{3904}{1 + 3.5136}$$

$$n = \frac{3904}{4.5136}$$

n=864.9

n=865 residents

Sampling technique

This study will adopt a multistage sampling procedure involving simple random sampling, cluster sampling, proportionate stratified sampling and availability sampling to select respondents for the study. Firstly, the five states in South-East Nigeria were numbered and three selected using simple random sampling. The selected states are Abia, Imo and Ebonyi.

Secondly, the states were clustered into nine senatorial districts, three from each state and three senatorial districts, one from each, were selected using simple random sampling. The senatorial districts are Abia Central, Imo North and Ebonyi-South.

Again, the local government areas in the selected senatorial districts were numbered and one local government was randomly selected from each of the three selected senatorial districts, making a total of three local government areas. The selected local government areas are Umuahia-South (Abia State), Okigwe (Imo State), and Ivo (Ebonyi State).

Furthermore, the communities in the selected local government areas were numbered, and one community was randomly selected from each of the local government areas, making a total of three communities chosen for the study. The selected communities are Laguru-Ubakala, Ihube and Isiagu. In order to collect appropriate data for the study, four relevant population categories were created in each community. The members of each population category will form the respondents for the study.

The proportionate stratified sampling technique will be used in selecting the respondents from each relevant population category in view of the fact that these population categories do not have equal sizes. Availability sampling will be used to select the actual respondents from each population category as shown in Table 3.

For the qualitative data, a total of one hundred and twenty (120) participants will be purposively selected to participate in 12 Focus Group Discussions (FGDs) comprising ten (10) participants in each group across the three (3) communities based on either availability or their leadership positions in the relevant qualitative population categories.

These qualitative population categories are the same with relevant quantitative population categories. The FGDs will be carried out as follows:

1. Three FGDs for men (One from each of the communities)
2. Three FGDs for women (One from each of the communities)
3. Three FGDs for youths (One from each of the communities)
4. Three FGDs for opinion moulders (One from each of the communities)

Table 3: Proportionate stratified random sampling for the study.

State/Community	Population Category	Total	Percentage	Proportionate Calculations	
Abia State					
Laguru	The Men	200	5.12	$200/3904 \times 865/1$	=44
	The Women	350	8.97	$350/3904 \times 865/1$	=78
	Opinion Moulders	80	2.05	$80/3904 \times 865/1$	=18
	The Youths	500	12.81	$500/3904 \times 865/1$	=111
Imo State					
Ihube	The Men	350	8.97	$350/3904 \times 865/1$	=78
	The Women	415	10.63	$415/3904 \times 865/1$	=92
	Opinion Moulders	82	2.1	$82/3904 \times 865/1$	=18
	The Youths	680	17.42	$680/3904 \times 865/1$	=151
Ebonyi State					
Isiagu	The Men	230	5.89	$230/3904 \times 865/1$	=51
	The Women	400	10.25	$400/3904 \times 865/1$	=87
	Opinion Moulders	67	1.72	$67/3904 \times 865/1$	=15
	The Youths	550	14.09	$550/3904 \times 865/1$	=122
Total		3,904	100		=865

Instruments for data collection

Questionnaire and focus group discussion were used to collect data for this study because of the need for a mixed-method research (in this case was 50% quantitative and 50% qualitative). The questionnaire was used to collect quantitative data and it was highly structured with only few unstructured questions; and it was divided into two major parts: The first part is the socio-demographic characteristics of the respondents while the other part addressed the substantive issues in COVID-19-orchestrated-poverty in south-east Nigeria: The demographics and health of persons with deteriorated livelihoods.

The focused group discussion on the other hand was used to gather qualitative data to compliment the quantitative data for further insights into the livelihood, demographic and health effects of COVID-19 pandemic on residents of South-East Nigeria. The FGD guide was highly unstructured questions with relevant probes.

Administration of instruments

The questionnaire was administered by the four researchers themselves with the aid of two research assistants. The research assistants were recruited on the basis of their ability to read, write and understand both English and Igbo languages as the major languages spoken in the areas. They were trained for two days on the purpose of the study, relevance of the study, administration and retrieval of questionnaire. The focus group discussion was conducted by the researchers themselves (one person for two

groups) in each of the communities while others recorded and took notes as the FGDs were on.

Method of data analysis

The quantitative data was processed with SPSS version 20. The socio-demographic data and the substantive issues were analyzed using descriptive statistics such as simple frequency tables, percentages, graphs and charts. Inferential statistics particularly, correlation were used to test the stated hypotheses while regression analysis was used to predict the relationship between the independent and dependent variables respectively.

The qualitative data were analyzed using content analysis which is a thematic analysis in which transcripts were edited and coded in line with the objectives of the study in order to compliment quantitative data.

Findings

In the study, a total of eight hundred and sixty-five (865) copies of questionnaire were distributed to the respondents and fully retrieved which formed the basis of analysis.

Socio-demographic characteristics of the respondents

The socio-demographic information of the respondents was statistically analyzed, using the data obtained from the survey conducted. The information is presented in Table 4.

Table 4: Socio-demographic characteristics of the respondents.

Description	Demographic variables	Frequency	Percentage (%)
Gender	Male	658	76.1
	Female	207	23.9
	Total	865	100
Age at last Birthday	18-23	126	14.6
	24-29	122	14.1
	30-35	347	40.1
	36-41	89	10.3
	42-47	103	11.9
	48 and above	78	9
Marital Status	Total	865	100
	Never Married	310	35.8
	Married	289	33.4
	Separated	51	5.9
	Divorced	76	8.8
	Widowed	139	16.1
Place of Residence	Total	865	100
	Rural	389	44.9
	Urban	476	55
Educational Attainment	Total	865	100
	No Formal education	64	7.4
	FSLC	198	22.9
	WASC/SSCE/GCE	231	26.7
	B.SC./HND	321	37.1
Occupation	M.SC./PhD	51	5.9
	Total	865	100
	Unemployed	189	21.8
	Student	85	9.8
	Self-employed	132	15.3
	Public servant	211	24.4
	Business/Trading	212	24.5
Apprentice	36	4.2	
Income Status	Total	865	100
	Below N25,000	163	18.8
	N25,000-N49,999	213	24.6
	N50,000-N74,999	135	15.6
	N75,000-N99,999	91	10.5
N100,000 and Above	263	30.4	
Total	865	100	

Note: Field survey, 2023.

Table 4 shows the socio-demographic data of the respondents. From

the table, it could be observed that a majority of the respondents 658 (76.1%) were male, while 207 (23.9%) were female. The age bracket shows that a majority of the respondents 347(40.1%) were between the age 30–35 years of age, while 78 (9.0%) were between the age 48 years and above. In terms of marriage it could be observed that a majority of the respondents 310 (35.8%) were never married while 51 (5.9%) were separated. Majority of the respondents 476 (55.0%) reside in urban area; a majority of the respondents 321(37.1%) were B.SC and HND holders while 51(5.9%) had M.SC and PhD. In terms of educational attainment 211(24.5%) were into business and trade while 85 (9.8%) were students. Lastly, in terms of income majority of the respondents 213 (24.6%) earn between N25, 000 to N49, 999.

Substantive issues

Research question one: What are the effects of COVID-19 pandemic on the livelihoods of residents of South-East Nigeria? The data is presented in Figure 1.

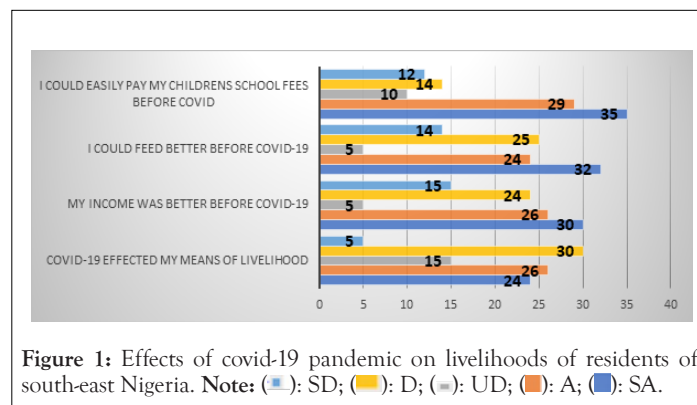


Figure 1: Effects of covid-19 pandemic on livelihoods of residents of south-east Nigeria. **Note:** (■): SD; (■): D; (■): UD; (■): A; (■): SA.

Figure 1 shows the first variable is centered on the capacity to pay children’s school fees, it could be observed that more of the respondents (35%) strongly agreed that they paid their children’s school fees easily prior to COVID-19; 29% agreed; 14% disagreed; 12% strongly disagreed while 10% were undecided. This means that a majority of the respondents (64%), just like the FGD participants, agreed that they could easily pay their children’s fees before COVID-19 than after COVID-19 period. An FGD participant, for example, narrated that:

Right from the onset of COVID-19 till date, the cost of things in the market has been rising and our salaries cannot even feed our families let alone paying our children’s school fees. We really find it difficult to pay our children’s school fees now than before COVID-19. COVID-19 made our salaries to lose value. The government has not even come to our aid by at least, increasing our salaries, instead they owe us salary arrears. (FGD/05/09/2023/Opinion Moulder/Health Worker).

The second variable is on whether the respondents could feed better prior to COVID-19, the findings show that a majority of the respondents (56% -32% strongly agreed and 24% agreed) agreed that they fed better prior to COVID-19 than during and after COVID-19; a total of 39% (25% disagreed and 14%strongly disagreed) did not agree that they fed better prior to COVID-19 while only 5% were undecided. This corroborated almost all the FGD narratives that showed that things are more difficult now than it used to be before the onset of COVID-19 pandemic, and

as such, many families find it difficult to eat just a square meal in a day.

The next variable is on income being better before COVID-19, the data show that 30% strongly agreed; 26% agreed that their income was better before the onset of COVID-19; 5% were undecided; 24% disagreed while 15% strongly disagreed that their income was better before the onset of COVID-19. This shows that a majority of respondents (56%) agreed that their income was better off before COVID-19 than during and after COVID-19 pandemic. This also corroborated the qualitative data.

The last variable looked at whether COVID-19 affected respondents' means of livelihood, 30% disagreed; 5% strongly disagreed; 15% were undecided; 26% agreed and 24% strongly agreed. This means that half of the respondents (50%) confirmed that their means of livelihoods were affected by COVID-19 pandemic. This corroborated with the FGD outcomes as the narratives of over half of the participants in the FGD groups and communities showed that their means of livelihoods were negatively affected by COVID-19. An FGD participant, for example, said:

I am trader, one of the market group executives but the hunger that COVID-19 brought made me to sell off a lot of my goods; and this is my only means of livelihood. I have not gotten myself since then, look at the condition of my shop, I don't know where to go from here (FGD/05/09/2023/ Market Group Leader/Trader).

Research question two: What are the effects of COVID-19 pandemic on the demographic conditions of residents of South-East Nigeria? The data is presented in Figure 2.

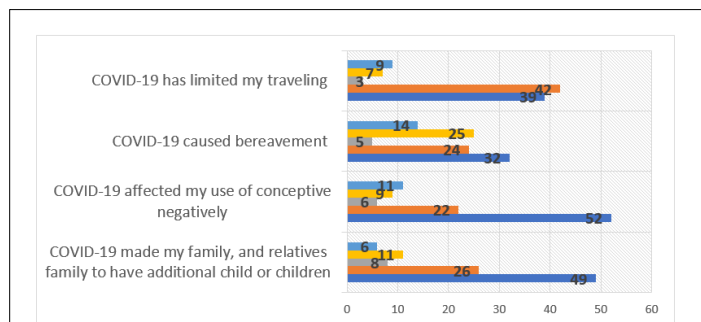


Figure 2: Effects of covid-19 pandemic on demographic conditions of residents of south-east Nigeria **Note:** (■): SD; (■): D; (■): UD; (■): A; (■): SA.

In Figure 2, the first variable is centered on if COVID-19 has limited the traveling of the respondents, it was found that (42%) of the respondents agreed, (39%) strongly agreed that COVID-19 limited their traveling while (9%) strongly disagreed, (7%) disagreed that COVID-19 limited their travelling while (3%) were undecided. This shows that a majority of the respondents (81%) admitted that COVID-19 curtailed their movement. This corroborated the qualitative findings as almost all the participants said that their movement was especially traveling outside their state was limited because of lockdown and economic situation at that time.

The second variable centered on if COVID-19 caused bereavement among the respondents, it was found that more of the respondents (32%) strongly agreed, (25%) disagreed, while (24%) agreed and (14%) strongly disagreed while (5%) were undecided. This shows

that a majority of the respondents (56%) were bereaved as a result of the poverty orchestrated by COVID-19. This finding was also corroborated by the qualitative data as more of the FGD participant reported that they lost either a family member or relative. In fact, one of the participants said:

“COVID-19 left a heavy blow on me, I lost my father, my mother and my aunty during COVID-19 because they could not receive adequate treat because of lockdown and poverty that accompanied it. Many organization was owing me salary carriers at that time. Of course, I have said earlier that I am a civil servant” (FGD/05/09/2023/Men’s Union Executive/Civil Servant).

The penultimate variable is on if COVID-19 affected their use of contraceptive negatively the data shows that (52%) of the respondent strongly agreed, (22%) agreed, while (11%) disagreed, (9%) disagreed and (6%) disagreed. This shows that a majority of the respondents (74%) agreed that COVID-19 affected their use of contraceptives negatively. This could be due to the excessive lockdown that made a lot patent medicine stores to lock up thereby affecting their access to contraceptives. FGD data also corroborated this finding. One of the FGD participants, a youth, reported as thus: “When shops and patent medicine stores are locked up, where do you expect people to get condoms from? Or don’t you know that condom is the most common contraceptive we use as young people?” (FGD/05/09/2023/youth leader/Mechanic).

The last variable on if COVID-19 made respondents family and relatives to have additional child or children, the data shows that (49%)strongly agreed, (26%) agreed, (11%)disagreed, (6%)disagreed and (8%) were undecided. This means that a majority (75%) of the respondents’ families and relatives at their reproductive ages had additional children during the period of COVID-19. This could be as a result of the use of contraceptives being negatively affected either because people could not afford them, the government did not extend their palliative towards that direction, or excessive lock downs and sit-at-homes that made couples to constantly stay together. This corroborated the qualitative data as more of the FGD participants’ narratives showed that many of respondents, their families and relatives at their reproductive ages had additional children during the COVID-19 period. One of the participants, for example, said:

“Hmmm! That one is true, even me, I had a baby during COVID-19. There was a time, when we believed we had completed our family planning and concluded childbearing. However, due to the lockdown, my husband and I found ourselves spending more time together at home. As a result of our increased closeness, we were blessed with the arrival of our baby boy. I know many of family friends and couples in this our neighborhood that also gave birth during that period. Some even got pregnant during that period and gave birth after the COVID-19 period. When a woman’s husband is consistently present, one can anticipate changes in their dynamic. Additionally, unmarried individuals faced challenges during the lockdown, leading some to become parents unexpectedly. The unavailability of condoms due to restrictions on movement, coupled with closed patent medicine stores, contributed to this difficult situation. Undoubtedly, it was a challenging and unfavorable.” (FGD/05/09/2023/opinion moulder/teacher).

The data implies that COVID-19 have had devastating effect on the

respondents as all the variables shows a negative come.

Research question three: What are the effects of COVID-19 pandemic on the health condition of residents of South-East Nigeria? The data are presented in Figure 3.

The third research question is on COVID-19 and health condition of the respondents; the first variable is on if COVID-19 led to increase in blood pressure of respondents, it was found that (42%) of the respondents disagreed, (39%) strongly disagreed, while (9%) strongly agreed and (7%) disagreed while (3%) were undecided. This means a majority of the respondents (81%) did not agree that COVID-19 caused their blood pressure to increase. This partly corroborated the qualitative findings. One of the FGD participants, for example, said, “It was at the beginning of the COVID-19 period that my blood pressure increased but thereafter, I got used to it. After all, there is nothing in this world, why would I think myself to death?” (FGD/07/2023/Women’s Union Executive/Civil Servant).

The second variable is on COVID-19 and sugar level of the respondents, the data shows that (32%) of the respondents strongly disagreed, (24%) disagreed, while (25%) agreed and (14%) strongly agreed while (5%) were undecided. This shows that a majority of the respondents (57%) disagreed that COVID-19 affected their sugar levels negatively. This corroborated the qualitative data as more of the FGD participants’ narratives showed that they got used to the situation on time and had to make some adjustment that helped them cope with the COVID-19 pandemic.

The third variable is on COVID-19 and body weight causing health issues, the findings shows that (34%) strongly disagreed, (29%) strongly agreed, (22%) disagreed while (9%) agreed and (6%)

remained undecided. This means that a majority of the respondents (56%) did not agree that that they added weight during COVID-19 period. This could be as result of the fact that the economic situation and lockdown denied people the opportunity of eating the things they desire. Besides, COVID-19 did not stop a lot of people from engaging in personal exercises especially in the rural areas. The last variable is on how physically the respondents felt before COVID-19, the data shows that (42%) of the respondents strongly agreed, (31%) agreed while (13%) disagreed, (6%) agreed while (8%) were undecided. This shows that majority of the respondents (73%) agreed that they felt better physically before the onset of COVID-19 than they felt after COVID-19. This could be as a result of people not being able to go out to do or buy the things they are used to or need. There is no doubt that the lockdown itself and social distancing as measures of curtailing COVID-19 are capable of making one not to feel well. This corroborated with the qualitative findings. One of the FGD participants, for example, narrated:

“My sister, I will not lie to you, I was emotionally deranged all through that period. I did not know how my body was doing me all through. I did not know what to think and what to leave. I have five children plus an aged mother, my husband was not going to work and I was not going to my shop. Hunger wanted to finish us, we almost begged if not for God’s mercy. Oh! I did not get myself, COVID-19 is evil” (FGD/07/09/2023/women Association member/trader).

Research question four: How can the living conditions (livelihoods) of residents of South-East Nigeria be improved? The data is presented in Figure 4.

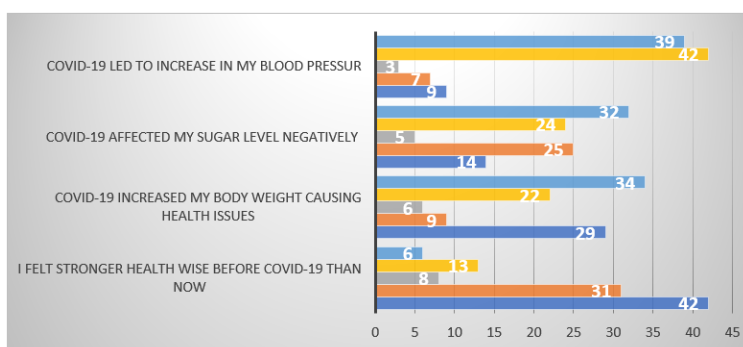


Figure 3: Effects of covid-19 pandemic on health conditions of the residents of south-east Nigeria. Note: (■): SD; (■): D; (■): UD; (■): A; (■): SA.

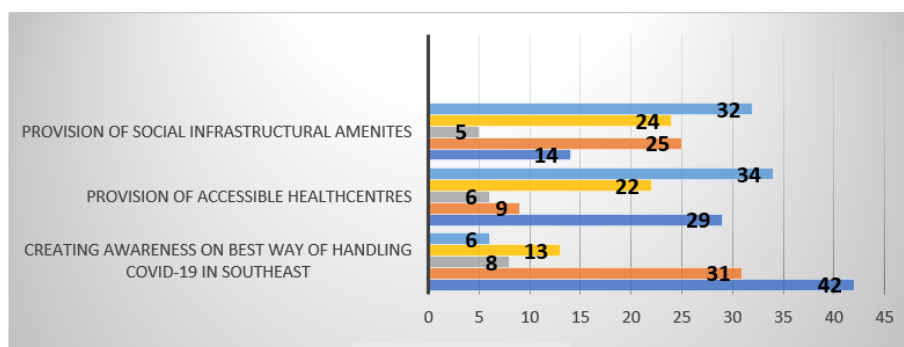


Figure 4: How livelihoods of residents of south-east Nigeria can be improved. Note: (■): SD; (■): D; (■): UD; (■): A; (■): SA.

Figure 4 showed how the livelihood of the people with deteriorated of southeast can be improved. The first variable is on provision of infrastructural amenities, the data shows that more of the respondents (32%) strongly disagreed, (25%) agreed, (24%) disagreed, (14%) strongly agreed while (5%) were undecided. This shows that a majority (56%) of the respondents did not agree that provision of infrastructural amenities can improve the livelihoods of the people. This could be as a result of the destructive attitude of the residents of South-East residents towards infrastructural facilities. It could be that the right awareness on the importance of these infrastructures to the enhancement of their livelihoods is lacking in the area. However, the FGD data did not corroborate this finding, showing a divided view about this. More of the FGD participants reported that provision of infrastructures can improve the livelihoods of the people of South-East Nigeria. The reason for this divided opinion could be because a lot of the respondents are traders and may not be educated enough to know the importance of infrastructural provision to their livelihoods.

The second variable is on provision of accessible health centers, the data found that (34%) strongly disagreed, (29%) strongly agreed while (22%) disagreed and (9%) agreed, while (6%) were undecided. This shows that a majority of the respondents (56%) did not agree that provision of accessible health centers could improve their livelihoods. This underscores the importance of education and awareness creation on sensitive issues in South-East Nigeria. However, the qualitative data did not corroborate the quantitative data as some of the IDI participant believe that health is wealth. One of the IDI participants, for example, said:

“It is only those that are healthy that can go about their businesses. If you are sick, you cannot work and you cannot make money and your children cannot go to school. Health centers are truly important especially the ones that we can trek to not the ones we will climb bike to go to” (FGD/07/09/2023/women union executive/business woman)

The last variable is on creating awareness on best way of handling COVID-19 in Southeast, the data shows that more of the respondents (42%) strongly agreed, (31%) agreed, (13%) disagreed, (6%) disagreed while (8%) were undecided. This shows that a majority of the respondents (73%) agreed that awareness creation is the best way of handling COVID-19 in Southeast. This implies that the best means of improving the livelihood of the south east is creating awareness on COVID-19 related issues. This corroborated the qualitative data as almost all the narratives of the FGD participants in the study area went in this direction. One of the FGD participants, for example, said:

“Yes, people should be sensitized on not just the dangers of COVID-19 but the opportunities it has created. Some way of life which COVID-19 brought has come to stay. For example, COVID-19 has established the digital era and numerous online businesses. Anybody that still sticks to the old ways of doing things may loss out, and the person’s livelihood will continue to in bad shape. People should be made to know that COVID-19 pandemic has ushered the digital era and anybody that takes advantage of it will be free from poverty for life. Let me just tell you the truth, creating awareness of the new normal that COVID-19 has brought, will take people out of poverty more than building roads and

hospitals. I am not saying that those ones are not good but I believe in teaching people how to catch fish instead not just giving them fish” (FGD/05/09/2023/Opinion Moulder/Teacher).

Another FGD participant to this effect also narrated as thus

The best awareness to be created this time should be on the importance of education in this post-COVID-19 era. COVID-19 caused a lot of harm to people’s jobs, businesses, health, families and caused a lot of changes. These changes require education for one to properly adapt. It is only someone that is educated that can businesses opportunities in this digital era. It is time to encourage our traders and farmers in South-East Nigeria through awareness to go to school first before becoming traders so that they function effectively in this post-COVID digital era (FGD/05/09/2023/Men’s Union Executive/Civil Servant).

Hypotheses

The formulated hypotheses were tested as thus

1. There is a significant relationship between COVID-19 lockdown and increase in fertility amongst couples as shown in Table 5.

Table 5: Relationship between COVID-19 lockdown and increase in fertility amongst couples.

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	3.417	2	0.854	1.253	0.012
Within Groups	552.231		0.613		
Total	556.648	862			

The ANOVA statistical tool was run to determine if COVID-19 lock down led to increase in fertility amongst couples. The result of the test indicates that there was no statistically significant difference between the groups as determined by one-way ANOVA (F (2, 862)=0.1253, p=0.012). This goes to suggest that there is a significant increase in fertility due to COVID-19 lockdown.

2. There is a significant relationship between COVID-19 epidemic and access to healthcare facility as shown in Table 6.

Table 6: Relationship between COVID-19 and access to healthcare facilities.

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	2.317	3	0.754	1.294	0.001
Within Groups	442.231	859	0.613		
Total	445.548	862			

The ANOVA statistical tool was run to determine if there is a significant relationship between COVID-19 epidemic and access to healthcare facilities. The result of the test indicates that there was no statistically significant difference between the groups as determined by one-way ANOVA (F (3, 862)=1.294, p=0.001). This goes to suggest that there is a significant relationship between outbreak of COVID-19 and lack of access to healthcare facilities.

DISCUSSION

Effects of COVID-19 pandemic on the livelihoods of residents

The study generally interrogated the effects of COVID-19 pandemic on livelihoods, demographics and health of residents in South-East Nigeria. At first it investigated the effect of COVID-19 pandemic on the livelihoods of residents of South-East Nigeria, and it was found that the pandemic affected the livelihoods of half of the south eastern Nigeria's residents, and a majority of them could easily pay their children's fees before COVID-19 than after (64%); fed better before COVID-19 than after (56%) and had a better income before COVID-19 than after (56%). This shows that all the indices of the residents' living conditions were negatively affected with multiplier effects of increased school dropout rate, malnutrition and low income with its concomitant further deterioration of the residents' livelihoods. The qualitative data also corroborated these findings as more of the FGD participants' narratives showed that COVID-19 pandemic came with inflation that resulted in the skyrocketing of the prices of commodities in the market without the proportionate increase in their incomes, and making them unable feed well and pay their children's school fees. This finding agrees with the study of Wang et al., who found that the lockdowns and containment measures disrupted economic activities, particularly small businesses, informal sector enterprises, and daily wage labourers; and that disruptions in some other western societies have been connected to income losses and economic hardship for many households [4].

Effects of COVID-19 pandemic on the demographic conditions of residents

The second specific issue the study interrogated was the effects of COVID-19 pandemic on the demographic conditions of residents of south eastern Nigeria. It was found that a majority of the respondents were bereaved because of the poverty orchestrated by COVID-19 (56%); had their movement curtailed (81%); neglected the use of contraceptive (74%) and either gave additional birth or had their family members or relatives give additional birth (75%). Besides, there is a significant increase in fertility due to COVID-19 lockdown at $p=0.012$. The possible explanation to this could be that incessant lockdowns as COVID-19 containment measure created enough room for couple to stay together more than ever resulting in giving additional birth. Again, the same lockdown affected access to contraceptives such as condoms, injectable and pills, thereby negatively affecting the use of contraceptives since patent medicine stores were locked up because of lockdown. Another explanation, especially on the side of bereavement, could be that the hardship orchestrated by COVID-19 pandemic made communities in South-East Nigeria to record high mortality rate. It could be recounted that during the period of COVID-19, movements were restricted, markets and patent medicine stores were locked up, salaries were withheld and businesses suffered, and there is no way all these would unconnected with the high level of bereavement suffered by the residents of South eastern Nigeria. Moreover, COVID-19 orchestrated hardship alone is capable of affecting migration let alone when lockdowns were added. These findings were also corroborated by the qualitative data. This is partly in consonant with the study by Liu et al who found that the pandemic affected vulnerable populations differently, including

the elderly, children, and those with pre-existing health conditions [5]. It also agrees with Xiong, et al., who stated that the pandemic profoundly impacted on various aspects of daily life [2].

Effects of COVID-19 pandemic on the health conditions of residents

The third specific issue this study interrogated was the effects of COVID-19 pandemic on the health conditions of residents. The findings showed mixed responses, while a majority of the respondents disagreed that COVID-19 pandemic made their Blood Pressure (BP) to rise (81%), increased their sugar level (57%); caused them to add weight (56%) while a significant majority agreed that they felt better before COVID-19 pandemic than after. Besides, there is a significant relationship between outbreak of COVID-19 and lack of access to healthcare facilities at $p=0.001$. Education could be the reason for this discrepancy given that south eastern Nigeria's residents are more of traders. The qualitative data, however, settled the issue as more of the FGD participants narratives favored the fact that residents felt physically and psychologically better off before COVID-19 than after the pandemic. One obvious truth is that one tends to have a more stable BP when one is physically and psychologically better off than when one is not better off. On this premise, it might not be wrong to state that COVID-19 pandemic worsened the health condition of South-East Nigeria's residents as strongly supported qualitative data, hypothesis two and partly by the quantitative data. This agrees with the work of Xiong, et al., who stated that the pandemic disrupted societies worldwide, profoundly impacting various aspects of daily life, and challenging the resilience of communities and healthcare systems [2].

How the living conditions (livelihoods) of residents of south-east Nigeria can be improved?

This last specific issue addressed in this study is how the living condition (livelihoods) of residents of South-East Nigeria can be improved. The findings also showed mixed responses. It was specifically found that a majority of the respondents did not agree that provision of infrastructural amenities (56%) and provision of accessible health centers (56%) could improve the livelihoods of the people rather a significant majority agreed that awareness creation is the best way of handling COVID-19 effects in Southeast. This discrepancy underscores the importance of education and awareness creation on sensitive issues in South-East Nigeria. The qualitative data, however, resolves the discrepancy as more of the FGD participants believe that even though awareness creation on the new opportunities that COVID-19 has brought could fix the effects of COVID-19 on the residents' livelihoods but that cannot be achieved with an empty stomach and when one is sick. It is, therefore, not wrong to state that a combination of provision of infrastructural facilities, accessible health centers and awareness creation on the new opportunities COVID-19 has opened, and are critical to improving the living conditions of residents of South-East Nigeria. This finding agrees with the report of WHO that the virus also underscored the importance of robust healthcare infrastructure [5].

CONCLUSION

The study investigated the effects of COVID-19 pandemic on livelihoods, demographics and health of residents of South-East Nigeria. The current state of hunger, school dropout rate,

insecurity, health depletion and death in south-east Nigeria prompted this study with the aim of restoring the glory of the region. The study has implicated COVID-19-orchestrated poverty which resulted from excessive lockdowns, social distancing, face masking and their resultant deterioration of livelihoods, neglecting the use of contraceptives, increase in number of births, restriction of movements and deterioration of the health of South eastern Nigeria's residents, as issues in the poor living conditions of the residents of South-east Nigeria. It is, therefore, concluded the present state of deteriorated livelihoods, poor fertility behaviour, restriction of movements, poor health state and ever-increasing mortality rates in South-East Nigeria orchestrated by COVID-19 may remain unabated if provision of infrastructural and social amenities are not intelligently combined with awareness creation on how to harness the new opportunities that COVID-19 has provided against all odds.

RECOMMENDATIONS

Given the findings of this study, the following recommendations are made

1. Free education from primary to tertiary levels should be introduced in South-East Nigeria to give the residents opportunities to curtail the effects of the damages of COVID-19 on the education of residents and to reduce the expenses of residents and give them the opportunity to rebuild their COVID-19 orchestrated deteriorated livelihoods.
2. The federal government should not only intensify the distribution of palliatives to Nigerians but should ensure that the distribution is thoroughly supervised especially in South-East Nigeria because of the intensity of the bereavement orchestrated by COVID-19 in the region which no doubt included breadwinners of residents.
3. The government should make provision for compulsory free HIV/AIDS and STD testing centers across the communities of South-East Nigeria to expose and thoroughly handle the further effects of contraceptive neglect caused by COVID-19 pandemic lockdowns.

4. The state government and NGOs should team up with federal government to sustain the compulsory feeding of primary school pupils across South-East Nigeria to reduce the burden on parents in feeding the additional mouths orchestrated by COVID-19 lockdowns and work-from-homes in their families.
5. More equipped healthcare facilities such as clinics and hospitals should be located in the rural communities of South-East Nigeria to enhance access to healthcare services given the damages of COVID-19 pandemic containment measures on the health of residents.
6. Awareness creation on both the effects of COVID-19 and the opportunities associated with the resultant new normal should be intensified in Southeast Nigeria to close the gap between the damages of COVID-19 and the available solutions to enhance the livelihoods of residents.

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