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Research Article

Gendered Impacts of COVID-19 Pandemic on Care Work, Economic Livelihoods, and Healthcare in Rural Nigeria: Building Resilience and Equity

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Abstract

This study explores the gendered impacts of the COVID-19 pandemic on unpaid care work, economic livelihoods, and healthcare access in rural communities of Edo and Delta States, Nigeria. Employing a mixed-method approach, the research incorporates qualitative semi-structured interviews (n=36) and quantitative household surveys (n=2,400) across three senatorial districts in each state. Data gathering spanned February to April 2023, with an emphasis on women's experiences before, during, and after the pandemic. Key findings reveal significant gendered impacts: women's unpaid care work increased substantially, with average daily hours rising from 5.2 to 8.7 during the pandemic; economic disruptions led to a sharp decline in average monthly income from 52,000 to 28,500 Naira, disproportionately affecting women in informal sectors; healthcare access was severely compromised, with the percentage of people able to access care when needed dropping from 68% to 37%. The study underlines the increase of gender inequality in rural Nigerian communities due to the COVID-19 crisis, underlining the urgent need for gender-responsive policies and initiatives. Recommendations include developing community-based health insurance systems, utilizing mobile technologies for health finance, supporting women's economic empowerment, and investing in rural education and skills development. These initiatives aim to enhance resilience and promote equity in the face of ongoing and future disasters.

Keywords: Gender inequality; COVID-19 pandemic; Unpaid care work; Economic livelihoods; Healthcare access; Rural communities; Resilience strategies

Introduction

The SARS-CoV-2 virus, which is the cause of the COVID-19 pandemic, first surfaced as a worldwide health emergency in late 2019 and quickly developed into one of the biggest problems of the twenty-first century. The World Health Organization (WHO) classified COVID-19 as a global pandemic by March 11, 2020, which signalled the start of an unparalleled time of unrest around the world [1]. Rapidly spreading across continents, the virus impacted millions of people and drastically changed daily life, global economic activity, and healthcare systems.

The first COVID-19 case in Nigeria, the most populous country in Africa with the largest economy, was confirmed in Lagos State on February 27, 2020 [2]. The federal government had to put in place a number of containment measures as a result of the virus's rapid national spread. These included prohibitions on interstate travel, lockdowns in large cities, the closing of non-essential businesses and schools, and limitations on public gatherings. Nigeria reported more over 266,000 confirmed cases and over 3,000 COVID-19-related deaths as of July 2023 [3]. However, because testing capability was limited, particularly in rural regions, these numbers probably underestimate the full effect of the pandemic. The pandemic's effects in Nigeria have been compounded by pre-existing challenges such as poverty, inadequate healthcare infrastructure, and regional instability [4]. In rural areas of Nigeria, particularly in states like Edo and Delta, the impacts of the COVID-19 crisis have been especially pronounced. These regions, already facing challenges such as limited access to healthcare, economic vulnerabilities, and traditional social structures, have experienced the pandemic as part of a broader poly-crisis that includes ongoing issues like climate change impacts and security challenges [5].

The concept of poly-crisis has gained prominence in recent years, particularly in the wake of the COVID-19 pandemic. Poly-crisis refers to the simultaneous occurrence of multiple, interrelated global challenges that compound and exacerbate each other [6]. The COVID-19 pandemic, climate change, economic instability, and social inequalities have converged to create a complex web of challenges for communities worldwide [7]. In rural areas of Low- And Middle-Income Countries (LMICs), the impacts of these overlapping crises are often more severe due to pre-existing vulnerabilities [8]. This poly-crisis's gendered aspects have a big impact on Nigeria's overall economic environment. In Nigeria, where the informal sector contributes significantly to GDP, women are especially important to the economy [9]. A deepening of the gender gap in economic participation and opportunity may result from the pandemic's disproportionate impact on women's economic activities, which is attributed to increasing care obligations and the susceptibility of sectors dominated by women [10]. Nigeria's overall economic growth

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and development may be hampered as a result.

Moreover, the escalation of gender disparities following the poly-crisis is a contributing factor to the growing economic unpredictability in Nigeria. Household earnings, spending habits, and investment decisions may all be impacted by the disruption of women's livelihoods and the growing load of unpaid care labor [11]. These gendered effects have the potential to worsen already-existing economic vulnerabilities and increase Nigeria's difficulty in achieving a comprehensive and long-lasting pandemic recovery.

Furthermore, the pandemic's strain on Nigeria's healthcare system, particularly in rural areas, has exposed the deep-rooted gender disparities in access to essential health services. The disruption of sexual and reproductive health services can have long-term consequences for women's well-being and economic participation [12]. Addressing these gendered health inequities is crucial for building a more resilient and equitable economy in the face of future shocks. Building resilience in the face of several crises has drawn the attention of academics and decision-makers. The necessity of flexible and responsive health systems that can endure several shocks at once was emphasized by Haldane et al. [13]. But as Morgan et al. [14] contend, addressing the unique needs and vulnerabilities of women and girls - particularly in rural and underserved areas - requires a gender-responsive approach to resilience building.

Novel approaches have surfaced to tackle the gendered consequences of poly-crisis. Rao et al. [15], for instance, detail community-based programs that supported women's economic activity during the COVID-19 pandemic in rural India. Mmammad et al. [16] in Nigeria emphasize the value of culturally aware practices and community involvement in enhancing maternal health outcomes in rural regions. To secure Africa's economic future in the face of increasing uncertainty, we must comprehend and address the gendered consequences of the poly-crisis as we navigate its complicated topography in rural areas.

The COVID-19 pandemic and its accompanying difficulties have brought to light the systemic injustices and vulnerabilities that Nigerian rural women and girls suffer. The purpose of this study is to shed light on the gendered aspects of the COVID-19 pandemic by examining how it affects access to healthcare, unpaid care work, and economic livelihoods. By looking at these important factors, we hope to help Africans come up with workable ways to increase their resistance to shocks that arise, especially for women living in rural areas. Our research can also help shape creative approaches to development financing that put resilience and gender equity first in a time of increasing uncertainty. Lastly, this research supports the Sustainable Development Goals (SDGs) [17], especially those concerning decent work and economic growth (SDG 8), gender equality (SDG 5), and excellent health and well-being (SDG 3). Through this alignment, the study hopes to support global efforts to address gender-based inequality and promote sustainable development in the face of intricately intertwined difficulties, as well as local and national understanding.

Theoretical framework

In addition to other ongoing problems, the COVID-19 pandemic has increased global vulnerabilities and widened already-existing disparities, especially in Low- And Middle-Income Countries (LMICs). In the rural communities of Edo and Delta States in Nigeria, this study aims to investigate the gendered effects of such COVID-19 Pandemic on unpaid care work, economic livelihood, and access to healthcare. With an emphasis on comprehending how the crisis affects women and girls, it seeks to establish policies for equity and resilience. This study's theoretical framework is based on a number of important theories and ideas, such as resilience theory, gender theory, intersectionality, the idea of poly-crisis, and health equality.

Gender theory provides a foundational understanding of how societal norms and roles are constructed and perpetuated. It emphasizes that gender is not just a biological distinction but a social construct that shapes experiences, opportunities, and expectations [18]. In the context of rural Nigeria, traditional gender roles often place women in positions of economic and social disadvantage, making them more susceptible to the impacts of crises. This theory helps to analyze how unpaid care work, typically assigned to women, intensifies during crises, thereby affecting their economic and personal well-being [19].

Intersectionality, a term coined by Kimberlé Crenshaw [20], offers a lens to examine how various social identities, such as race, gender, class, and ethnicity, intersect to create unique experiences of oppression and privilege. In this study, intersectionality is crucial for understanding the compounded disadvantages faced by rural women in Edo and Delta States. It allows for a nuanced exploration of how gender interacts with other social categories to influence access to resources, economic opportunities, and healthcare. Intersectionality underscores that the experiences of rural women cannot be homogenized and that multiple factors contribute to their vulnerability during poly-crises [21].

The concept of poly-crisis refers to the simultaneous occurrence of multiple, interconnected crises that amplify each other's effects [22]. The COVID-19 pandemic is a prime example, as it has intertwined with economic downturns, social disruptions, and healthcare system strains to create a complex web of challenges. This framework is instrumental in examining how these overlapping crises impact rural communities, particularly women who often bear the brunt of unpaid care work and have limited access to healthcare and economic resources. By framing the pandemic and its accompanying issues as a poly-crisis, this study can better understand the multifaceted and reinforcing nature of these challenges [6].

The Capabilities Approach, developed by philosophers Amartya Sen and Martha Nussbaum, is a framework for understanding human well-being and development. It focuses on two key concepts: functioning's and capabilities. Functioning's are the valuable activities and states that a person can achieve, such as being well-nourished, having good health, being educated, or participating in community life. Capabilities, on the other hand, are the real opportunities or freedoms that people have to achieve these functioning's - in other words, the genuine choices available to individuals. The core idea of this approach is that social arrangements should aim to expand people's capabilities, enabling them to pursue the kind of life they have reason to value.

Resilience theory focuses on the capacity of individuals, communities, and systems to adapt, recover, and thrive amid adversity [23]. This theory is pertinent for exploring how rural communities in Edo and Delta States can develop strategies to withstand the impacts of poly-crises. Resilience is not just about bouncing back but also about transforming and improving systems to better cope with future shocks. In the context of this study, resilience theory helps to identify

community strengths, adaptive strategies, and the role of social networks and support systems in enhancing the resilience of women and girls [24].

Health equity involves ensuring that everyone has a fair opportunity to attain their highest level of health, with a focus on eliminating disparities caused by social, economic, and environmental disadvantages [25]. This concept is central to understanding the barriers rural women face in accessing healthcare services, especially sexual and reproductive health services, during poly-crises. Health equity emphasizes the need to address systemic inequalities and provide targeted interventions to improve health outcomes for marginalized groups. This framework will guide the analysis of healthcare access and the development of strategies to promote equitable health systems in rural Nigeria [26].

Methodology

Research design

This study employs a descriptive qualitative research design to explore the gendered impacts of poly-crisis on unpaid care work and access to healthcare in rural communities of Edo and Delta States, Nigeria. This approach was chosen for its suitability in exploring complex social phenomena and capturing the nuanced experiences of participants [27]. The descriptive design allows for an in-depth exploration of men's and women's roles in childcare division, the impact of COVID-19 on economic livelihoods, and access to essential sexual and reproductive services before, during, and after the pandemic. This study is part of a larger project titled "Gender Inequality and Rural Women's Health in post-COVID-19 Nigeria: Working with Policymakers and non-state Actors to promote inclusive and Sustainable Rural Women's Health in Nigeria".

Study setting

The research focuses on rural communities in Edo and Delta States of Nigeria. These states were selected based on three key considerations:

- The rural areas in these states exemplify the prevailing patterns of gender inequality and poor women's access to essential health services typical of rural Nigeria.
- The study builds upon a rapid assessment previously conducted by the Center for Population, Environment, and Development (CPED) in these states.
- CPED has established strong working relationships with policymakers and various non-state actors in these states, developed through a decade of implementing action research projects (Figures 1 and 2).

Participant selection and recruitment

This study employed a mixed-method approach, combining qualitative and quantitative data collection methods. A stratified random sampling technique was used to ensure representative participation from the three senatorial districts of both Edo and Delta states. Convenience and purposive sampling techniques were combined to obtain 36 participants for the qualitative component [28]. Six participants-two men and four women-came from each of the three senatorial districts in each state, for a total of eighteen individuals from each state. Town criers, social influencers, and fliers were used in the recruiting process to connect with possible participants [29]. A total of 2,400 participants were gathered for

Figure 1: Map of Delta State Showing the 3 Senatorial Districts and the 3 Project L.G.As.

Figure 2: Map of Edo State Showing the 3 Senatorial Districts and the 3 Project L.G.As.

the quantitative component (1,200 from each state). Four hundred responders were chosen from each senatorial district in each state. In order to give women's experiences priority, the sampling technique purposefully oversampled them while also adding men to represent their viewpoints. Heads of households were the focus of the household survey. Participants had to be 18 years of age or older and residents of rural communities in the three senatorial districts of Delta and Edo states in order to meet the inclusion requirements for both components. The objectives and methods of the investigation were explained to each participant. The study was completely voluntary, and there were no cash or other incentives provided.

Data collection methods

Data collection employed a mixed-method approach, combining qualitative semi-structured interviews and quantitative household surveys. The data collection period spanned from February to April 2023.

Qualitative data collection: The 36 participants who were chosen for the qualitative component underwent semi-structured interviews. To guarantee clear communication and accurate representation of participants' perspectives, these interviews were done in either English or pidgin English, depending on the participant's option. Every

interview was captured on audio to enable precise transcription and examination. While preserving uniformity throughout interviews, the semi-structured interview method allowed for flexibility in examining participants' experiences.

Quantitative data collection: A household survey questionnaire was administered to the 2,400 participants recruited for the quantitative component. The survey was designed to gather data on the impact of the COVID-19 pandemic on unpaid care work, economic livelihoods, and access to healthcare. It included both closed-ended and open-ended questions to capture a comprehensive picture of participants' experiences and perspectives.

For both components, socio-demographic data was collected prior to each interview or survey to provide background information on the participants and ensure they met the study criteria. This mixed-method approach allowed for a comprehensive understanding of the gendered impacts of the COVID-19 pandemic in rural communities of Edo and Delta states, combining the depth of qualitative insights with the breadth of quantitative data.

Data analysis

The audio recordings were transcribed verbatim and analyzed using thematic analysis. This method was chosen for its flexibility and effectiveness in identifying, analyzing, and reporting patterns within qualitative data [30]. The analysis process involved the following steps:

- Familiarization with the data through repeated reading of transcripts
- Initial coding of the data
- Searching for themes
- Reviewing and refining themes
- Defining and naming themes
- Producing the report

To ensure reliability and validity, multiple researchers independently coded a subset of the data and compared their findings. Any discrepancies were discussed and resolved to achieve consensus. The research team also engaged in reflexive practices throughout the analysis process to minimize bias [31-34].

Ethical considerations

Ethical considerations were prioritized throughout the research process. Informed consent was obtained from all participants prior to their involvement in the study. The consent process included a thorough explanation of the study's purpose, procedures, potential risks and benefits, and the voluntary nature of participation. Participants were informed of their right to withdraw from the study at any time without consequences. To ensure confidentiality and anonymity, all identifying information was removed from the data, and pseudonyms were used in reporting findings. Audio recordings and transcripts were stored securely with access limited to the research team [35].

The study protocol was reviewed and approved by the Research and Ethics Committee, College of Medical Sciences, University of Benin with Protocol Number of Ethical Clearance-CMS/REC/2023/061 and the Human Ethics REB Committee, University of Windsor with Awards File No. 41257. Cultural sensitivities and local customs were respected throughout the research process, with guidance sought from local community leaders when necessary [36,37].

Results

Demographic characteristics of participants

The socio-demographic details of the participants in the semi-structured interview are displayed in Table 1. A wide range of demographics, including ages, genders, marital statuses, educational backgrounds, and economic activities, participated in the interviews from the states of Edo and Delta, offering a thorough picture of the communities under study. Male and female volunteers from various communities in the states of Delta and Edo were included in the study. There were 36 participants in all, with 22 women and 14 men. The ages of the participants varied from 21 to 69. The following was the distribution of ages: Twelve participants were in the 40-49 age range, eight were in the 50–59 age range, five were in the 60–69 age range, and five were in the 20–29 age range. The individuals had a range of educational backgrounds: four had completed elementary school, ten had completed secondary school, two had obtained a National Certificate in Education, seven had completed National Diplomas, three had completed Higher National Diplomas, eight had completed Bachelor's degrees, and two had completed Master's degrees. Thirty of the thirty-six participants were married. One was separated, two were single mothers, and three were single. The participants who were married had one to twelve children, ages one to forty-two. The length of time that each participant had lived in their own neighbourhood varied from two to sixty-five years, with many having spent a large amount of their lives there. In addition to farming, trade, teaching, and working in the civil service, participants also pursued careers in woodwork, fashion design, and hospitality. There was a range of 120,000 Naira to 2.4 million Naira in the stated annual incomes, while some individuals did not disclose their income.

Table 2 presents the demographic attributes of participants in the household quantitative survey that was carried out in the states of Delta and Edo. This includes information on the distribution of genders, age groups, levels of education attained, and primary occupations. With around 76% of the sample being female, female respondents exceed male respondents in both states. With the exception of Edo State males, who are more likely to fall into the 60+ category, the age distribution reveals that the 40-59 years group is the most common across all sexes and states (42.6% to 48.0%), followed by the 20–39 years group. The distribution of educational attainment shows that primary education is most common in Edo State (37.2% males, 37.1% females), while secondary education is most common in Delta State (41.2% males, 47.5% females). Notably, the proportion of people without a formal education is higher in Edo State. In terms of occupation, trading is more common among females, whereas farming is the most popular activity across states and genders (47.9% to 60.4%). Gender and state disparities are seen in unpaid domestic activities and sector employment.

Impact of COVID-19 on unpaid care work

Table 3 illustrates how the COVID-19 pandemic disproportionately affected women by increasing the amount of unpaid care duties. The average number of hours that women worked providing unpaid care rose from 5.2 hours prior to the pandemic to 8.7 hours during it, according to quantitative data ($t(899) = 58.3$, $p < 0.001$). Although men also saw an increase ($t(899) = 32.1$, $p < 0.001$), the impact magnitude was significantly higher for women.

Qualitative findings provided context for these changes. The

Table 1: Socio-Demographic Characteristics of Participants in Semi-Structured Interviews for Both Edo and Delta States (Source of Data: CPED, 2023).

Participants	Gender	Age	Education	Marital Status	Ages of Children	Yrs. in Comm.	Economic Activities	Annual Income(N)
Delta South/Irri Community, Delta State								
DS1	Female	21	National Diploma	Single	-	21	Fashion Designer	No Resp.
DS2	Female	33	National Certificate in Edu.	Married	7, 5, 3	7	Trading	No Resp.
DS3	Female	48	Secondary School	Separated	20, 17, 14, 11	48	Trading	900000
DS4	Female	45	Higher National Diploma	Married	18, 15, 12, 8	28	L.G.A. Officer	2.4M
DS5	Male	58	B.Ed.	Married	24, 22, 18, 14	15	Teaching	1.74M
DS6	Male	25	B.Sc.	Single	-	25	Hospitality	300000
Delta Central/Akpata Community, Delta State								
DC1	Female	54	Registered Nurse	Married	29, 26, 24, 20	28	Nursing	2.04M
DC2	Female	39	Secondary School	Married	10, 6	33	Farmer	No Resp.
DC3	Female	24	National Diploma	Single	-	21	Trader	480000
DC4	Female	42	B.Sc.	Single	-	20	Cosmetologist	720000
DC5	Male	61	National Diploma	Married	34, 32, 29, 27, 27, 25, 24, 23, 20	45	Farming	600000
DC6	Male	46	M.Sc.	Married	10, 8, 6, 3	33	Public Servant	1.15M
Delta North/Alifekede Community, Delta State								
DN1	Female	52	Secondary School	Married	33, 31, 29, 26, 24, 21, 15	50	Farming	600000
DN2	Female	42	Secondary School	Married	19, 17, 14, 12, 8	20	Trading	540000
DN3	Male	58	National Certificate in Edu.	Married	28, 26, 21, 17, 13	56	Teaching	1.44M
DN4	Male	69	B.Sc.	Married	36,33,31,20, 20	59	Retired Civil Servant & Farming	720000
DN5	Female	61	B.Ed.	Married	38, 36,34, 32, 30, 28	61	Farming	840000
DN6	Female	65	Teachers' Training	Married	38, 35, 33, 32	65	Farming	360000
Edo South/Ikoha Community, Edo State								
ES1	Female	43	Primary School	Married	24, 21, 19, 16, 12, 11	25	Farming	420000
ES2	Male	37	B.Sc.	Married	1	30	Farming	450000
ES3	Female	30	B.Sc.	Single Mom	3	3	Farming	No Resp.
ES4	Female	28	Secondary School	Married	6, 4	7	Farming	120000
ES5	Female	44	Primary School	Married	12, 8	2	Fashion Designer	500000
ES6	Male	56	Secondary School	Married	18, 15, 12, 9	44	Court Officer	900000
Edo Central/Usugbenu Community, Edo State								
EC1	Female	47	Secondary School	Married	24, 21, 19, 16, 13	15	Trading	2.4M
EC2	Female	47	Primary School	Married	20, 18, 16, 14, 12	47	Trading	120000
EC3	Male	47	Higher National Diploma	Married	26, 22, 18, 16	47	Farming	360000
EC4	Male	52	M.Sc.	Married	11,8, 6, 9	15	Civil servant	900000
EC5	Female	39	National Diploma	Married	15,13, 11, 10, 6	6	Catering	840000
EC6	Female	42	National Diploma	Married	20, 17	12	Hair stylish	420000
Edo North/Idoko Community, Edo State								
EN1	Female	49	Higher National Diploma	Married	25,23, 18, 14	19	Civil Servant	720000
EN2	Male	53	B.Sc.	Married	17, 14, 12, 9, 7	20	Teaching	300000
EN3	Male	47	Secondary School	Married	17, 14, 12, 9, 7	47	Carpentry	360000
EN4	Female	48	Primary School	Married	31, 30, 28,26, 24, 24, 20, 15	33	Farming	320000
EN5	Female	44	Secondary School	Married	9, 6, 5, 2	44	Farming	320000
EN6	Female	65	Primary School	Married	42,40, 38, 36,34, 30, 26,18	65	Farming	320000

closure of schools emerged as a critical factor, as articulated by one respondent:

- *...schools were closed and the children and husbands were at home, and these increased the time we spent doing household tasks and the stress level on the women increased, (DC2F, Married, Farmer, 39).*

This increase in childcare responsibilities was reported by 78% of women compared to 42% of men. While some households reported increased male participation in childcare, particularly with schoolwork, the overall burden remained heavily skewed towards women. As one female participant noted, "The woman does the childcare, bathing, cooking, and other household tasks..." (EN6F, Married, Farmer, 65), indicating the persistence of traditional gender roles even during the crisis.

The psychological impact of this increased burden was substantial. Many women reported feeling overwhelmed and stressed, as exemplified by one respondent:

- *...the children's task was not easy to handle at home. Doing their school homework as well as other house chores was very tasking and demanding, (EC5F, Married, Caterer, 39).*

Effects on economic livelihoods

The pandemic severely disrupted many different sectors of the economy. A partial rebound to 41,200 Naira post-pandemic was observed, but only after a considerable decline to 28,500 Naira during the pandemic from 52,000 Naira pre-pandemic ($F(2, 5397) = 1285.4$, $p < 0.001$), according to quantitative data displayed in Table 4. Concurrently, there was a notable surge in employment losses: 38% of participants reported losing their jobs as a result of COVID-19, and 22% of them were still unemployed after the pandemic.

Qualitative data provide insightful information about the mechanisms behind the COVID-19 pandemic's economic effects.

Table 2: Demographic Characteristics of Respondents in the Household Quantitative Survey (Source of Data: CPED, 2023).

Characteristic	Delta State		Edo State	
	Male	Female	Male	Female
Percentage of Respondents	0.242	0.758	0.238	0.762
Age Distribution				
Less than 20 years	0.008	0.018	0.003	0.011
20-39 years	0.294	0.376	0.169	0.378
40-59 years	0.48	0.455	0.464	0.426
60 years and above	0.218	0.15	0.365	0.184
Highest Educational Level				
No formal education	0.06	0.114	0.109	0.256
Primary education	0.294	0.286	0.372	0.371
Secondary education	0.412	0.475	0.352	0.318
Tertiary Education	0.234	0.124	0.167	0.055
Main Occupation				
Farming	0.48	0.494	0.604	0.479
Livestock Production	0.021	0.007	0.005	0.022
Trading	0.171	0.296	0.102	0.303
Public Sector	0.073	0.036	0.099	0.03
Private Sector	0.071	0.029	0.104	0.058
Unpaid Household Activities	0.016	0.06	0.016	0.067
Other	0.168	0.079	0.07	0.041

Workers in the informal sector and small enterprises were badly impacted by lockdowns and movement restrictions. According to one respondent:

- *...my income reduced drastically during the pandemic, many customers were no longer patronizing me again because of lockdown and fear of contracting the disease, (ES5F, Married, Fashion Designer, 44).*

Simultaneously, the pandemic disrupted access to essential materials and supplies, as explained by a 56-year-old retired civil servant and farmer:

- *"...the barriers we faced during COVID-19 concerning economic activities is that the material we needed we could not get them because people were not going to places where we could access those materials", (DN4M, Married, Retired Civil Servant and farmer, 69).*

The farming sector suffered particular difficulties, such as supply chain disruptions and a lack of labour. A farmer clarified:

- *…As a farmer, COVID-19 affected the labour I used on my farmland. Labourers were not available and even if they were, there was no money to patronize them as intended, (DC2F Married, Farmer, 39).*

Work patterns also changed as a result of the pandemic. According to quantitative statistics, farming operations increased during COVID-19 from 65% to 82%, and then settled at 73% after the pandemic. This shift was reflected in qualitative responses, with one participant noting:

- *...the number of days I spent working on the farm increased so that I will be able to provide what we need to eat, (ES2M, Married, Farmer, 52).*

Food insecurity rose abruptly from 22% before COVID-19 to 67% during the pandemic, remaining elevated at 41% post-COVID-19 (McNemar's test: Before vs During: $\chi^2 = 823.5$, $p < 0.001$; During vs Post: $\chi^2 = 312.7$, $p < 0.001$). This was worsened by increased living costs, as one respondent highlighted:

- *...prices of food like rice and beans, and commodities like fuel and transportation have been increasing continuously without a stop in this state and are often higher in the rural areas, (DC4F, Single, Trader and Cosmetologist, 42).*

Data on how savings were used for everyday needs during the COVID-19 pandemic shows a notable change in financial coping mechanisms. Just 15% of respondents said they used their savings for everyday costs prior to the pandemic. But at the height of the COVID-19 pandemic, this number shot up to 73%, indicating a serious strain on household finances and a depletion of resources. Even though there was some improvement in the post-COVID-19 period, the percentage stayed high at 48%. This pattern implies that even while the pandemic's initial economic impact has slightly lessened, many households are still having financial difficulties and have not entirely regained their financial stability.

Changes in access to healthcare

The pandemic considerably impacted healthcare access in rural communities as clearly represented in Figure 3 below. Quantitative data as seen on the chart showed a reduction in the percentage of people able to access healthcare when needed from 68% pre-pandemic to 37% during the pandemic ($\chi^2 = 184.5$, $p < 0.001$), with a partial recovery to 54% post-COVID. Qualitative findings revealed that fear of contracting COVID-19 was a major deterrent to seeking medical care. One participant noted:

- *"...many people stopped going to health center for fear of contracting COVID-19", (ES1F, Married, Farmer, 43).*

This concern, along with limitations on transportation and financial resources, caused a sharp rise in post-pandemic care delays or abandoned treatments, which increased from 18% to 62% during

Table 3: Impact of COVID-19 on Unpaid Care Work (Source of Data: CPED, 2023).

Period	Average Hours spent on Unpaid Care Work Per Day		Percentage Increase in Child Care Responsibilities	
	Women	Men	Women	Men
Before COVID-19	5.2	1.8	-	-
During COVID-19	8.7	3.2	0.78	0.42
Post-COVID-19	6.9	2.5	0.52	0.28

Table 4: Impact of COVID-19 on Economic Livelihoods on Informal Sector Workers (Source of Data: CPED, 2023).

Indicators	Before COVID-19	During COVID-19	Post-COVID-19
Average Monthly Income (Naira)	52000	28500	41200
% Reporting Job Loss	-	0.38	0.22
% Engaged in Farming Activities	0.65	0.82	0.73
% Using Savings for Daily Expenses	0.15	0.73	0.48
% Reporting Food Insecurity	0.22	0.67	0.41

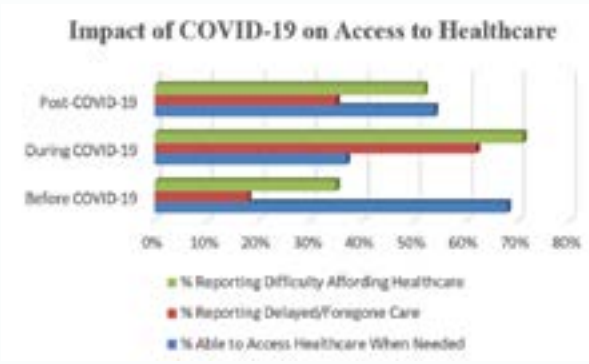

Figure 3: Impact of COVID-19 on Access to Healthcare. Source of Data: CPED, 2023.

COVID-19. Disruptions in the healthcare supply chain made the access problems worse as highlighted by one respondent:

- *...supply chain of medical equipment, drugs and other services were all affected and reduced in supply..., (ES1F, Married, Farmer, 43).*

These disruptions, which had an impact on the provision of necessary medications and services, were especially severe in rural areas.

Coping strategies and resilience

Despite these difficulties, the interviews showed a few strategies for coping and instances of resilience among the community members. A lot of participants talked about how they shared resources and information through community support networks. Throughout the crisis, these networks have been essential for helping people and preserving social cohesiveness.

For example, a participant from Delta State shared:

- *We have formed a small group in our community to help each other out. If someone is in need, we pool resources to support them. It's not much, but it helps us get through these tough times...", (DS3F, Separated, Trader, 48).*

Such community-driven initiatives have been vital in sustaining livelihoods and well-being. Some women have also adjusted by looking for different ways to make money. One female respondent from Edo State noted:

- *I started making and selling face masks when my business slowed down. It's not a lot, but it helps to bring in some money..., (ES4F, Married, Farmer, 28).*

These adaptive strategies demonstrate the resilience and resourcefulness of the community members in the face of ongoing adversity.

Despite the challenges, some of the community members demonstrated resilience and adaptability by diversifying their economic activities. For example, a female caterer mentioned:

- *I am into catering, but I had to start rendering home services like house cleaning to people in Ekpoma and Irrua which improved my income very well..., (EC5F, Married, Caterer, 39).*

These qualitative observations are consistent with the quantitative data, which demonstrates a rise in farming activities and a rise in the percentage of people using savings for daily costs (from 15% to 73%) during COVID-19. These data also demonstrate adaptive financial methods in response to economic challenges. These examples of adaptation highlight the tenacity of small company owners in rural areas, who discovered new streams of revenue in spite of the severe limitations placed on them by the lockdown. The lockdown's overall detrimental effects on small business operations, however, underscore the necessity of focused assistance and measures in order to foster fairness and strengthen resilience in the event of future crises.

Discussion

In rural communities of Edo and Delta states of Nigeria, this study sheds light on the gendered effects of the COVID-19 pandemic and related poly-crisis on unpaid care work, economic livelihoods, and access to healthcare. The results show a complicated web of interrelated causes that have made gender inequality worse and presented additional difficulties for women and girls living in these areas [38-42].

The fact that women were doing more unpaid care work during the pandemic is one of the most startling discoveries. Our quantitative data showed that, during the pandemic, women's average daily hours spent providing unpaid care increased significantly from 5.2 hours to 8.7 hours ($t(899) = 58.3$, $p < 0.001$). Although men also saw an increase ($t(899) = 32.1$, $p < 0.001$), the impact magnitude was significantly higher for women. Domestic responsibilities rose significantly as a result of school closures and family members spending more time at home; women bore the majority of these responsibilities. This is consistent with global patterns seen throughout the pandemic, where women have taken up a disproportionate share of the additional unpaid care labour [43]. The general trend suggests a strengthening of established gender roles, even though some households reported a minor shift towards a more equitable sharing of childcare chores, particularly in helping with schooling [44].

The pandemic had a major financial impact on rural livelihoods; many respondents reported a large decline in income. The average monthly income decreased from 52,000 Naira before the pandemic to 28,500 Naira during the pandemic, and then partially recovered to 41,200 Naira after it ended ($F(2, 5397) = 1285.4$, $p < 0.001$), according to our quantitative study [46]. The impact was clearly gendered since women, who frequently work in informal and unstable jobs, had higher levels of economic insecurity. This result is in line with reports from around the world that the pandemic has had a disproportionately negative impact on women's economic activity [47]. These economic difficulties were made worse by the interruption of supply lines and the labour shortage, which was especially severe in the agriculture sector.

During the pandemic, there was a significant impact on access to healthcare, particularly those related to sexual and reproductive health. According to our data, the proportion of individuals who could obtain healthcare, when necessary, dropped from 68% prior to the pandemic to 37% during it ($\chi^2 = 184.5$, $p < 0.001$), and then partially recovered to 54% after COVID-19 [48-50]. The dread of COVID-19, along with travel limitations and financial difficulties, caused a decrease in the use of healthcare services. This is especially troubling because sexual and reproductive health services are vital to women's overall autonomy and well-being. Globally, these patterns have been noted, and estimations indicate that these vital services may be severely disrupted in low- and middle-income nations [51].

There are serious repercussions from the pandemic's disruption of services related to sexual and reproductive health. Although the number of unwanted births was not specifically measured in our survey, our respondents' reports of limited access to family planning and contraceptives point to a possible rise in this category [52,53]. Wide-ranging effects on women's educational and economic opportunities, as well as the general well-being of families, are anticipated from this development [54]. These interconnected issues highlight the critical importance of maintaining robust sexual and reproductive health services, even in times of crisis, to safeguard women's health, autonomy, and long-term socioeconomic opportunities.

Recommendations

Actionable policy recommendations

Based on the knowledge gathered from this research, we have developed six important policy suggestions. With a focus on empowering rural women in particular, these ideas aim to increase African communities' resilience against new challenges. Our recommendations seek to tackle the particular vulnerabilities made apparent by the poly-crisis and provide policymakers and other stakeholders with workable plans to advance gender equality, strengthen economic stability, and enhance general well-being in rural communities.

- **Promote women's economic empowerment:** Implement policies and initiatives that assist women's economic activity in rural areas, such as providing targeted credit and financial services, supporting women's agricultural cooperatives, and promoting women's land rights. Empowering women economically can strengthen their resistance to shocks by diversifying their revenue sources and enhancing their financial stability.
- **Strengthen social protection systems:** Increase the scope of social safety programs and make sure they are accessible to rural women and gender-responsive. This could include health insurance plans designed with rural areas' needs in mind, cash transfer programs, and unemployment assistance. Sturdy social safety nets can help women weather economic downturns and keep their wellbeing intact in times of need.
- **Enhance rural healthcare systems:** Invest in strengthening the infrastructure of rural healthcare, paying special attention to preserving vital services related to sexual and reproductive health in times of emergency. This ought to cover plans for community health worker initiatives, telemedicine, and mobile health services. Ensuring women have access to high-quality healthcare can enhance their resilience in general and their capacity to deal with health-related issues during shocks.
- **Invest in rural education and skills development:** Strengthen educational opportunities for girls and women in rural areas, including adult education and vocational training programs. Providing women with relevant skills and knowledge can enhance their long-term resilience and adaptability to changing economic circumstances, enabling them to pursue diverse livelihood options.
- **Promote community-based health insurance (CBHI) in rural areas:** Implement CBHI schemes by providing initial seed funding, offering technical assistance, and creating supportive policy frameworks. Conduct awareness campaigns to educate rural populations about the benefits of CBHI and provide incentives for enrolment. CBHI can improve access to healthcare financing for rural women, reducing their vulnerability to health shocks.
- **Leverage mobile technology for health financing:** Form alliances with fintech and telecom companies to create and market user-friendly mobile health savings and payment platforms that are suited to rural communities. By helping rural women manage and save for medical costs, these digital solutions can greatly increase their access to healthcare funding and increase their ability to withstand health shocks.

Conclusion

Gender inequality in Nigeria's rural communities of Edo and Delta States has been severely worsened by the COVID-19 pandemic, with far-reaching effects on the lives of women. This study reveals the disproportionate increase in unpaid care work for women, severe economic disruptions affecting their livelihoods, and compromised access to essential healthcare services, particularly in sexual and reproductive health. Despite these challenges, rural communities have demonstrated remarkable resilience, adapting through community support networks and income diversification strategies.

The findings highlight the vital need to move away from one-size-fits-all crisis management strategies and toward culturally appropriate and context-specific solutions in the future. This study emphasizes the potential for revolutionary transformation and the significance of centering recovery initiatives and long-term development plans around gender equality. Recognizing unpaid care work, bolstering social security programs, improving rural healthcare systems, encouraging women's economic empowerment, and funding education and skill development are important areas for intervention.

Longitudinal research will be essential in the future to track the long-term consequences of the poly-crisis on rural women, with an emphasis on the distribution of unpaid care labor, access to healthcare, and economic recovery. Furthermore, assessing the efficacy of gender-responsive programs will give practitioners and policymakers important information. Building more fair, resilient, and sustainable rural communities has the potential to be achieved by tackling these issues head-on, providing Africa with a more solid economic future despite persistent uncertainty.

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