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COVID-19 and livelihoods status of people with disabilities in Northern Nigeria: A mixed-methods

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Abstract: The COVID-19 pandemic has ravaged the entire world with devastating consequences in collapsing global and local economies. PWDs are particularly exposed to the risks of the pandemic as well as to the policy measures meant to address its spread considering their underlying predicaments. This study aims at examining the differentiated impact of COVID-19 pandemic on livelihood status of PWDs in northern Nigeria based a sample size of 3,301 respondents. The study adopts both qualitative and quantitative approaches to data collection and analysis. The paired t-test results established a significance reduction in the respondents' levels of income and numbers of hours of work during COVID-19 pandemic and an insignificant difference between the available landed property and value of livestock owned by PWDs before and after the outbreak of COVID-19. The disaggregated analysis of the impact equally established differing impacts of COVID-19 policy measures across the three geo-political zones. The study argued that COVID-19 policy measures have further exposed PWDs to shocks and cut off their sources of social support without any special arrangements to address their peculiar predicaments. This implicates the need for proactive strategies and inclusive social protection programs tailored towards the needs of PWDs by healthcare and welfare agencies.

Keywords: Disability, livelihoods, welfare; COVID-19, social support, mixed-methods, disaster

Introduction

As the name scientifically and socially implies, Persons with Disabilities (PWDs) face demoralizing live problems and challenges that are differentiated according to peculiar disabilities and special needs of these individuals. In addition to this, various situational factors, such as poverty, environment, culture and social norms and values further compound these persons' life challenges. Natural disasters, expectedly and especially in the absence of functional institutional support mechanisms will only accentuate their 'troubles.' PWDs, historically and contemporarily are often isolated, incarcerated, observed, written off and of course "controlled to a degree probably unequal to that experienced by any other minority group" (Davis, 2006: xv). Socially, the 'identity', stereotype and crisis face by this minority group, arguably leave them on the edge and margin of human social life. In other words, according to Dunn and Burcaw (2013), the prejudice, which is attached to disability groups, contextualizes and marks them as members of a social group subjected to marginalization, discrimination and neglect. Thus, in the context of certain socio-cultural milieu, PWDs' identities could compound their problems by not only exposing their vulnerabilities but putting their lives in danger as well. The case of albino in Tanzania and other Southern African countries are case in point, where

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inadequate or no provision was made for their safety. From all perspectives—livelihood, human rights, public policy, healthcare, housing, social engagement and interactions, cultural multilateralism and civic life—PWDs are not only critically marginalized but also dauntingly vulnerable.

With these dynamic complexities, which are even more conflicted and compounded by institutional and politico-organizational deficit and predicament of developing societies, it means that the everyday life of the PWDs is one of helplessness, uncertainties and arguably often on the brink of 'death.' In situations of disasters of war, disease outbreak, flood, draught, earthquake, etc., their lives hang on the balance in the access to all sources of their livelihood—shelter, food, healthcare, social support—become dangerously (in-)accessible. For example, Park, Yoon and Choi (2019:1) report that following the 2017 Pohang earthquake in South Korea, the experience of persons with disabilities showed "absence of an evacuation system…, absence of disability-inclusive disaster information and the absence of disability disaster prevention drills and evacuation."

If a regional earthquake could expose the lack of policy provisions against the vulnerabilities of PWDs, what could be the situation of these groups in the wake of COVID-19 pandemic that ravaged the entire world, Thus, not only the COVID-19 itself becoming a source of fear and death, but measures to curb its spread have become even more dangerous, in some cases, than the COVID-19 itself. Accordingly, both the COVID-19 and the measures to curb its spread have combined to make life for citizens and especially PWDs, who even in 'normal times' find life harrowingly difficult, would be dangerously push to the edge of total surrender to the 'death' as will cut-off all their livelihood supplies.

At the early stage of the outbreak of COVID-19, it was assumed to be a great leveller', i.e. collapsing differences between groups, exposing them to the same risks and bridging inequality in the access to raw sources of livelihood and destroying discrimination. However, according to Sakellariou *et al* (2020:2), the COVID-19 pandemic deepened and exacerbated inequalities, with protection against the risk of infection, access to treatment and impacts of public health measures disproportionately affecting the most disadvantaged populations, including the poor, people in precarious employment, people with chronic conditions and people belonging to ethnic minorities. *Disabled people are particularly exposed to the risks of the pandemic as well as to the measures to address it and their impact*" (emphasis added). The impact of the pandemic could be measured by the magnitude and degree of the effects on livelihoods of factors of disability.

Accordingly, and in specific terms, COVID-19 pandemic mitigating measures and management policies would not only present new challenges and problems, but would also compound traditional ones (such as living in crowded environment, lack of community support) for PWDs, especially in societies with high rate of poverty, such as Nigeria and particularly Northern Nigeria. This research is meant to investigate the extent to which various measures imposed by Nigerian government through the National Centre for Disease Control (NCDC) and Presidential Task Force to mitigate the spread and control of COVID-19 impact the live experiences of PWDs in Northern Nigeria. Further to this, the research would disaggregate such impacts of COVID-19 policy measures on PWDs based on geo-political zones.

There are numerous relevant existing studies on the impacts of the COVID-19 pandemic on PWDs. For instance, Truk and McDermott (2020) looks at the outbreak of COVID-19 and the preparedness, associated isolation and protectives measures on people with protective measures, while Audrey et al. (2021) focus on infection rate, testing, treatment, and mortality for people with disabilities, on wellbeing of PWDs (Sosencrans et al., 2021; Sheunesu, Ayansola, Tendai & Mandla, 2023;), financial worries, health, and perceived organizational support of PWDs (Moniques et al., 2021), COVID-19 policy measures and livelihoods of PWDs in Northeastern Nigeria (Olarinde et al., 2024) and(Thompson, Chubo-Uzo, Rohwerder & Wickenden, 2021), however, none of these studies attempts to investigate the impact of COVID-19 policy measures on the livelihoods of PWDs except for Olarinde et al, (2024) indicating the limited scope of the majority of the existing literature. In the case of Olarinde et al., (2024), the study is limited by its scope and approach. The study only focuses on a geo-political zone in Nigeria and the livelihoods status of PWDs after the pandemic. The present study differs both in approach and focus, the study covers three geo-political zones that made-up northern Nigeria, while at the same time

attempts a comparative analysis of the livelihood status of people with Disabilities before and after the COVID-19 pandemic based on a disaggregated analysis among the three regions. This is of essence to explore to explain the extent to which these measures compound their existing special predicaments, and the efficacy of socio-cultural and institutional strategies put in place to mitigate these challenges *vis-à-vis* ease their differentiated special life situations. The disaggregated analysis is important for a robust policy design that would be all-inclusive, comprehensive, and context specific especially those that would take care of their needs in abnormal times. Aside from this introduction, section 2 reviews existing literature, section 3 dwells on methodology while section 4 interprets and discusses results and section 5 concludes.

Review of Literature

Recent literature provided a mixed and contradictory approach to the understanding of disability. Disability is understood to be impairment, and anything (individual contextual factors, environment or personal) that limits/restricts individual activity and interaction within a society (Gupta, Anne and George, 2021). Wisner (1993) conceptualized PWDs based on a person's ability to effectively discharge ordained human activities. To Wisner (1993) a person whose ability to effectively perform certain ordained activities such as movement, perception, expression, and ability to reason is compromised either by injury, illness or societal limitations, in most cases rely on other for support and in worst cases for survival, is assumed to be disabled. In a broader view, the World Health Organization (2020) defines disability as "any condition of the body or mind that makes it more difficult for the person with the condition to do certain activities and interact with the world around them" (cited in Bernard et al., 2020:1). This shows that a person suffering from impairment has some elements of disability. This perspective underscores the conclusion by the United Nations Convention on the Rights of Persons with Disabilities [UNCRPD] (2006) that persons are considered disabled when they have "long-term physical, mental, intellectual or sensory impairments which in interaction with various barriers may hinder their full and effective participation in society on an equal basis with others" (cited in Mactaggart et al., 2018:1). Globally, 1.3 billion people equivalent to 16% of the world population are having one form of disabilities or the other, while in Nigeria the population of people with disabilities stood at 35.5 million (WHO, 2025; National Population Commission, 2024).

These variations in what constitute disability explain the plethora of different perspectives to the study of disability. Some theories and approaches were developed to address general issues of PWDs (Social model, systems theory of disability, critical disability theory, social Darwinist theory, social constructivism theory of disability, postmodernism theory of disability etc.) and in some cases the theories and approaches have specific practical applications to certain kinds of disabilities such as mechanistic theory of disability and deviance theory of disability.

The critical disability theory is based on anti-liberalism and anti-functionalist trend in the study of disabled people in society. Critical disability theory sees the problem of disabled people as a product of an unequal society (Oliver, 1999). The theory was developed on a different conception of social inequality, access to goods and polarization processes in communities. The main objective of critical theory is centered on how to change and reshape a new and better society. Thus, the theory seeks to explain what is wrong with current social reality, identify the actors that can change it and to formulate available targets of social change. Critical disability is typically concerned with achieving inclusion, equality and autonomy of people with disabilities in society (Sztobryn-Giercuszkiewicz, 2017). In essence, critical disability theory opposes traditional assumptions that seek to oppress people with disabilities and violate their rights. The social model of disability on the other hands was developed in Britain by disabled activists from the Union of the Physically Impaired against Segregation (UPIAS). The central concern of the social model was elaborated in a document of UPIAS (1976) called Fundamental Principles of Disability. The basic thrust of social model of disability is that it enables disabled persons to look at themselves in a more positive way, which increases their self-esteem and independence. The model seeks to do away with the notion where disabled persons often feel that they are a burden on family and friends, and a problem for doctors who cannot cure them.

Fundamentally, the social model approach to disability sees the problems as society's barrier, rather than the individual's impairment. To this extent, it enables disabled individuals to take away the blame from themselves and place it on society. Thus, according to Barnes et al (2010:163) it is society "which disables people with impairments, and therefore any meaningful solution must be directed at societal change rather than individual adjustment and rehabilitation." In this regard, the social model of disability tries to empower disabled persons to demand from society to remove all kinds of barriers in their ways. The criticism of the social model is that it is euro-centric and did not take into consideration prevailing welfare conditions in Third World countries. Whereas the welfare level in some advanced liberal democratic countries is high, the same cannot be obtained in poor African countries with low level of welfare. In most African countries, particularly in Nigeria, it is the disabled persons or their families that cater for their immediate needs with little or nothing from the society.

Literature focusing on emergencies and its effects on PWDs are still evolving; however, the consensus among the researchers is that PWDs are barely put into consideration and as such they are mostly affected. For instance, during the SARS-CoV epidemic in France Chevance et al. (2020) attempts to provide policy document that will ensure proper mental health care during the epidemic based on content analysis of medical literature and scientific result in local initiatives. The study concludes that disorders either cognitive or behavioral**,** psychosocial impairments (including socio-economic living conditions) and old age made people with diagnoses of mental disorders vulnerable to infection during a pandemic, while closure of community health facility during pandemic worsened their case. As a policy response toward reducing the vulnerability of this group of people, Chevance et al. (2020) cited an instance where confederates (PWDs) under compulsory ambulatory care situations, are provided with specific case-management such as home visits to build their resilience to experience associated with lockdown that could trigger mental disorders. Their argument is predicated on the need to overhaul the organizational structure of the mental healthcare system in response to the SARS-CoV-2 epidemic.

Empirically, there are numbers of studies that have looked into relationship between welfare and disability (Foubert, Levecque, Rossem and Romagnoli, 2014; Lin and Lin, 2009) on one hand, and welfare consequences of natural disasters on persons with disabilities (Park, Yoon and Choi, 2019; Mazumdar, Mazumdar, Kanjilal and Singh, 2014) on the other hand. More importantly, studies looking at the impact of COVID-19 pandemic on PWDS are still evolving. Disappointedly, studies specifically looking at impact of COVID-19 measures on PWDS in Africa, particularly in Nigeria are hard to come by after a thorough search of the literature. Investigating the relationship between disability and livelihood opportunities through a comparative analysis Mactaggar et al, (2018) adopted a nested case control study of adults that are both able and disabled as research design. The study used Cameroon and India as case study based on a sample of 4,056 per country. A battery of econometrics techniques in the form logistic and multivariate logistic regression analyses were adopted as methods of data analysis, to compare participation in work between cases and controls stratified by various demographics characteristics like age, sex among others. It was revealed that PWDs in Cameroon have higher percentage of unemployed either in the form of informal economic activities or agriculture while in India lower percentages of cases (PWDs) were not engaged. This relationship persists even when the samples were stratified based on demographics characteristics across all social economic statuses. It was confirmed that demographics features are strong determinants of getting engaged in economic activities.

Relating to natural disasters and the livelihood of PWDs, Park, Yoon and Choi (2019), investigate the impact of 2017 Pohang city earthquake in South Korea on People with disabilities. The study adopts methodologies of interpretive description and Key Informant Interview (KII) using qualitative methods of data analysis. Based on ten key interviewees cutting across care giver, public officers, activists, PWDs with different forms of disabilities, the study confirmed that challenges faced by PWDs were compounded during the period and participants developed some sense of helplessness. It was further confirmed that evacuation during the period was made so easy based on the policies that were put in place, while the PWDs were left to be on their own, and this becomes more critical for those who have mobility iimpairments due to their exclusion from disaster education and drill which make them less resilience to shocks. The study recommends for a robust geographic database on information about the

location of each PWDs. In a related study, Sakellariou, Malfitano and Rotarou (2020) examine the level of PWDs inclusiveness of government measures to mitigate the spread of COVID-19 in four South American Countries: Argentina, Brazil, Chile, and Peru, using a documentary research design. The analysis of the 72 documents gathered was carried through a framework of analysis, it was found that despite the existence of robust policy measures, the implementation was not all-inclusive and failed to take into consideration the special needs of PWDs. One shortcoming associated with this study has to do with its methodology by relying solely on policy documents that may not be a true reflection of the documents of COVID-19 measures on PWDs.

Methodology

Research design

The study adopts Participatory Action Research (PAR) and design. This method is philosophically underscored and grounded in the realities of the PWDs and leads to action (Lewin, 1946, cited in Asaba and Suarez-Balcazar, 2018). The primacy of PAR, which informs its adoption, is that it is 'community-based' and directly involves local people at all stages of the project (Pain and Francis, 2005). In this context and given the nature of the study, PWDs affected by COVID-19 were involved in this work. In this way, communities affected by the COVID-19 measures served as the source of data for research and form the focal center of the policy formulation and implementation.

Sampling and Sampling Technique

This study adopts mixed methods of data collection and analysis, while multi-stage sampling technique was applied in sample selection. To get the sampling frame for the study**, t**he study adopts 2018/2019 Nigeria Living Standard Survey conducted by National of Bureau of Statistics in collaboration with the World Bank. The survey reported an estimated population of males and females with disabilities in each state in percentages, calibrated to 2019 total population (NBS, 2020: 2). The percentages of disabled males and females' population in each state as reported by the survey, was transformed into actual figures, using 2019 population estimates. This was followed by the summation of total number of males and females PWDs in each state to arrive at an aggregate PWDs figure of 1,423,560 for the 19 states located in Northern Nigeria and this serves as sample frame for the study. To draw a sample from the frame, only PWDs from the age of 18years and above were considered. This is based on the intuition that people with disabilities from age 16 years and below is still dependent and as such not responsible for their own welfare. Although, people within the ages of 65 years and above are also part of non-working population, the categories of people are included in the study because disability is taken to be an increasing function of age.

Table 1a.

Distribution of Respondents Across the Selected States

	Interview			Survey	
Geo-Political Zone	State	KII	FGD	Sample Size	Sample size (%)
Northeast	Bauchi	5	3	378	11.45
	Gombe	5	3	376	11.39
	Yobe	5	3	379	12.03
Northcentral	Kwara	5	3	365	11.06
	Nasarawa	5	3	372	11.26
	Plateau	5	3	409	12.39
Northwest	Sokoto	5	3	392	11.88
	Kaduna	5	3	403	12.21
	Kano	5	3	209	6.33
Total	9	45	27	3,301	100

To scientifically select sample for the study, a multi-stage sampling technique was adopted *inter-alia*. From each Geo-political zone, three states were randomly selected from each zone, giving a total of 9 states. Each of the states selected were stratified into three senatorial districts and two LGAs were samples from each of senatorial districts, giving us a total of 18 LGAs. In each of the LGAs selected, a stratified random sampling procedure was applied to arrive at the final sample that spread across all the domains of disability in proportion to their sizes. Following the World Health Organization's International Classification of Functioning, Disability, and Health, the PWDs were categorized into six domains of disabilities: Hearing, vision, speech impairments, learning disabilities, physical disabilities, and mental disabilities (NPC, 2019). Those with more than one disability were grouped under multiple disabilities domain, giving a total of seven domains. A total of 3,301 respondents were sampled spread across the 18 LGAs. The final sample cut across all the seven main domains in proportion to their different sizes, 45 KIIs and 27 FGDs were conducted (See Table 1A).

Data Collection

For collection of data, this study relies heavily on participatory research tools using structured questionnaires, Focus Group Discussions (FGD and Key Informant Interview (KII). The structured questionnaire was used to obtain quantitative data, the KII and FGD on the other hand were used to collect qualitative data. For the structured questionnaire, the study adopts and modified the Coronavirus Disability Survey (COV-DIS) developed by the University of Michigan Centre for Disability Health and Wellness to generate data about the experience of PWDs during the outbreak of COVID-19 pandemic in the USA. Specifically, the instrument measures how the PWDs go about their daily activities required for daily living, employment and financial challenges, access to medical care, mobility and other general and psychological well-being. All these, which are fundamentally the focus of this study, are likely to exacerbate the condition and livelihood activities of PWDs (Ehrlich *et. al*., 2020).

Inter lia, this study used both quantitative and qualitative methods of data analysis. This is with a view to complement and corroborates each other. The qualitative data were analysed using methodologies of interpretive description, which involves data immersion, coding, data reduction and interpretation (Hollway and Jefferson, 2000). Descriptive statistics and simple paired t-test were adopted to analyse the quantitative data. The hypothesis will be tested at α <0.05% level of significance. Before the data collection exercise, a pilot study was conducted in Sokoto state covering three LGAs located within the metropolis based on a sample size of 120 respondents (40 respondents per LGA). Reliability of the instruments was achieved a test and retest approach was adopted by administering the same set of instruments consistently to the respondents by the trained research assistants for consistency and accuracy. To ensure validity of the instruments, experts thoroughly validated the questionnaires before the pilot study. This ensures that the instruments are relevant and align with the study objectives.

Variables Definitions, Measurement and Procedures.

The Paired t- test, a non-parametric technique, was used to examine the differences in livelihoods status, of PWDs pre-COVID-19 and during COVID-19 periods. Livelihood is conceptualized as a means of living and assets needed to acquire it. Livelihood outcomes are higher income, increased welfare, human dignity, and food security among others (ADB, 2004). Therefore, the probability of an individual achieving improved welfare (livelihood outcome) depends on various livelihood assets. In other words, anything that affects household livelihood assets will automatically affect his welfare. Some of these assets are human, physical and total capital etc. (Gatiso *et al*., 2018). The focus of this study is on household total capital, disaggregated into financial, natural and social capitals as proxy for level of PWDs welfare. Therefore, to examine whether there is significant difference in the livelihood's status of PWDs before and after the introduction of COVID-19 measures, the total capital (disaggregated into financial, natural and social capitals) available to the household before the outbreak of the pandemic were compared with available total capital at the post COVID-19 pandemic.

Table 1b.

Summary of Variables Measurement

Variable Name	Proxy	Indicator	Measurement
Livelihood Status	Livelihood Asset	Financial capital	Household total income, institutional support and stock of goods and livestock in naira value.
		Natural capital/ total asset	Possession of uncultivated land and other landed properties in naira value
		Social capital	Average working hours per day

Financial capital: This represents household total income and institutional support. The household's income includes available regular household cash income through wage employment, relatively liquid assets like stocks of goods and livestock, while aids, remittances, pension, charity, and other (DFID, 1999), can be categorized as institutional supports coming from Federal, State and Local Governments and Non-governmental organizations. The level of financial capital as an indicator of livelihood's status is measured as sum of household income from wage employment, aids, remittances, gifts, charity, value of livestock and other cash generating assets excluding land and other related assets in Naira.

Natural capital: These include land and other related assets (Nawrotzki, Hunter, and Dickinson, 2012; Gatiso *et al*.,2018). The outbreak of COVID-19 might have forced people to go out of their way to dispose part of their land and other related properties, thereby, deteriorates the PWDs welfare. The selling of their landed properties and other related assets are predicated on the need to smoothen consumption expenditure and needed to cope with the stress associated with various measures introduced during the outbreak of the pandemic. The possession of uncultivated land and other landed properties (measured in Naira and converted into dollars for international comparison) are used as proxy (see Table 1B)

Social capital: Social capital explains the quantum of social support available to an individual. Glaeser, Laibson and Sacerdote (2001) defined social capital as norms, networks and other related, forms of social connection. The ability to confront poverty and vulnerability by an individual is dependent upon social support in the form of stock of social networks and civil associations available before such individuals (Woolcock,1998), Various proxies have been used to measure social capital. In line with OECD, social capital is proxy by average working hours. This, we believe, is more relevant to this study. Measures like social distance and lockdown can reduce the support from people enjoyed by PWDs when at work and from medical personnel for those that require medical assistance. Therefore, individuals with little social support will spend lesser hours at work due to lack of support or worsened health status manifesting in inability to work for a longer period.

Ethical Statement

The study obtains ethical approval from the University Research and Ethics Committee (UDUS/UREC/2020/022) and research ethic has been duly followed. A verbal/written consent was obtained from each participant before commencement of data collection exercise.

Results and Discussion

The analysis of the quantitative data commenced with demographic characteristics of the respondents as shown in Table 2. Analysis of the nature of disability of respondents revealed that 25.9% of the respondents have hearing impairments while 9.6%, 10.40% and 32.92% account for respondents with cognitive, speech and physical disabilities respectively. Only 3.94% of the total respondents, equivalent to 127 PWDs are mentally disable while the remaining 540 (16.74%) respondents are visually impaired. The distribution of the respondents as shown in Table 4.1 clearly shows that majority of people with disability in Northern Nigeria are physically challenged while those with mental disability recorded the lowest frequency of 127 out total 3,212 total respondents. Disaggregated distribution of respondents by domains of disability and geo-political zones is presented in Table 2. From the table, the Northcentral and Northeast accounted for the larger percentage of PWDs with cognitive disability, recording 11.6% and 11.3% respectively. In terms of physical disability, the two regions (Northwest and Northcentral) ravaged by armed banditry accounted for the larger percentage of PWDs, 37.8% and 34.34% respectively. This further corroborates the earlier assertion that conflict in the zone could be the likely explanation behind the greater number of people with physical challenges in the two geo-political zones. Northcentral accounted for the zone with large percentage of PWDs with visual impairment followed by Northwest, while those with hearing disability are higher (37.22%) in Northeast.

Table 2.

Disaggregated distribution of respondents according to six domains of disability

Domain of Disability	Geo-political Zone			
	North-West (%)	North-East (%)	North-Central (%)	Total (%)
Cognitive Disability	7.46	11.31	11.58	9.64
Hearing disability	22.73	37.22	17.17	25.85
Speech Disability	8.59	5.48	19.00	10.47
Physical disability	37.80	27.30	34.34	32.89
Mental disability	3.16	4.78	3.74	3.96
Visual disability	15.80	14.09	20.37	16.78
Total				99.46

Source: Author's Computation using STATA 17, 06/05/2023.

In every micro analysis of livelihood status sex and age distribution are critical for policy design and implementation, thus Table 2 presents the distribution of respondents based on age and sex. The table indicates that 1,268 out of the 3,252 PWDs are females while 1,984 were males, equivalent to 38.99% and 61.0% of the total respondents, accordingly. The disaggregated analysis of the gender distribution of the respondents across the three geo-political zones indicates that male accounts for larger percentage of the total respondents in each of the zones with cumulative frequency of 58.64%, 62.77% and 61.32 in Northwest, Northeast and Northcentral, respectively. This result contradicts the National Bureau of Statistics 2022 projected population figures. Nigeria Bureau of statistics ([NBS], 2022) projected female population figure to be 108,432,971, slightly above that of male that stood at 108,350,410. However, Table 3 revealed that the number of disabled males is far above that of female in the North. This is obvious, males are usually exposed to risk more than their women counterpart. Females are confined to the corner of their homes in Northern Nigeria, while the males (in most cases husband) are solely responsible for daily needs of their family. In addition, in a conflict infected communities, the probability of male either being a victim, or an actor of conflict is higher compares to that of female. This and many other reasons might be attributed to the higher percentage of male PWDs in the study area.

Table 3.

Distribution of Respondents by Age and Sex

	Age of the respondent					
	18 - 35 years	**36 - 50 years**	**51 - 65 years**	**66 and above**	**Total**	**Total (%)**
Zone						
North-West						
Female	229	158	21	6	414	41.64
Male	219	280	70	18	587	58.64
Total	448	438	91	24	1,001	100
North-East						
Female	238	131	37	21	427	37.23
Male	389	219	73	39	720	62.77
Total	627	350	110	60	1,147	100
North-Central						
Female	255	121	31	20	427	38.67
Male	329	253	65	30	677	61.32
Total	584	374	96	50	1,104	100
Gand Total						
Female	722	410	89	47	1,268	38.99
Male	937	752	208	87	1,984	61.0%
Total	1,659	1,162	297	134	3,252	100

Source: Author's Computation using STATA 17, 06/05/2023.

The age distribution of the respondents is equally presented in Table 3. The raw data presented in the table indicated that 722 respondents were female within the age bracket of 18 -35 years and 937 were male of the same age bracket. For those between the ages of 36 – 50 years, 410 were females and 752 were males, while for those between the age bracket of 51 – 65 years, 89 were female and 208 were males. Overall, 86.7% of the total respondents fall within the age bracket of 18 – 50 years while 23.3% were 51 years and above. This implies that the majority of the PWDs are within working age. Most disturbing is the fact that PWDs within the age bracket of 18 – 35 years recorded the highest frequency across all the three geo-political zones in the North. The Northeast takes the lead with total frequency of 627, followed by Northcentral and Northwest with a count of 584 and 448 respectively. This has serious negative implications on productivity and development of society.

Table 4.

Distribution of Respondents based on Educational Attainment by Zone

	No school attended	**Primary education**	**Qur'anic education**	**Secondary education**	**Tertiary education**	**Grand Total**
North-Central	231	194	200	299	208	1132
North-East	156	156	353	299	187	1151
North-West	221	125	307	224	126	1003
Grand Total	586	475	860	822	521	3286

Source: Author's Computation using STATA 17, 06/05/2023.

In terms of educational attainment, Table 4 revealed that the Northeast recorded the larger number of respondents with Qur'anic education (religious education) followed by Northwest. From the table, 353 respondents from the Northeast had Qur'anic education, while in the Northwest and Northcentral, 307 and 200 respondents had Qur'anic education respectively. This established the dominance of Islamic religion in the region. Overall, the Northeast has the largest percentage of educated respondents by

adding those with at least Qur'anic education up to tertiary education. The Zone has 995 of its respondents' with at least Qur'anic education equivalent to 32.30% of the total respondents, followed by Northcentral with 27.42% and Northwest recording 23.79%. This implies the majority of PWDs in Northeast are more educated than their counterparts in the other two geo-political zones, hence expected to have a better livelihood status if education is taken to be significant determinant of livelihood status.

Examining the impact of COVID-19 policy measures on livelihood status of PWDs in northern Nigeria, a simple paired t-test was conducted. To investigate the rate at which the implementation of these measures impacted the financial capital of PWDs, we compared the average level of income before and after the COVID-19 outbreak using both box graph and simple paired t-test, the results are as presented in Figure 1 and Table 4, respectively.

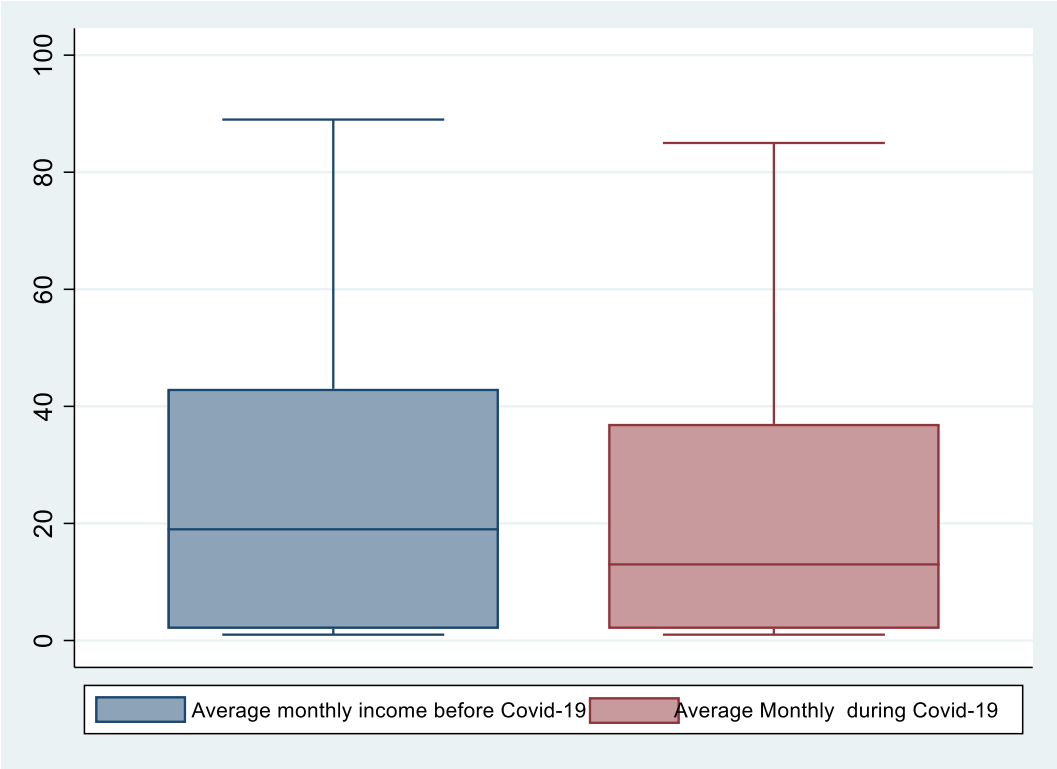

Figure 1. *Average monthly Income of Respondents before and after COVID-19*

Author's Computation using STATA 17, 06/05/2023.

From the figure, it could be concluded that the average monthly income before the outbreak of COVID-19 is higher than the mean income during or after the pandemic. Before the pandemic, the median monthly income indicated by the line inside the blue box appears to be around ₦20,000, while during or after the COVID-19 the average monthly income (the line inside the red box) has reduced by ₦10,000 to around ₦10,000. The box graph further revealed that the interquartile range (IQR) between the 25th and 75th percentiles before COVID-19 is wider, indicating more variability in income distribution. It ranges from about 10 to 40, however during and or after the COVID-19 IQR becomes narrow and revolves around 5 to 30, indicating a reduction in the the level of income inequality compared to before COVID-19. Therefore, it could be concluded that the level of income before COVID-19 recorded higher values, but the higher level of inequality compared to the level of income during and after COVID-19, the average monthly income is lower, but with a reduction in inequality gap, thus COVID-19 is a leveler. The qualitative data obtained during the KII and FGD further corroborates the above findings when they noted that:

> The restriction of movement limits the extent at which people move around to make a living. Under this situation, disability persons are most affected. Because in the first place they do not have the ability to earn income as such they rely on charity from other members of society that earn income through various economic activities, but these people are also under lockdown, as such our sources of income have been affected. On the other hand, the pandemic has disrupted businesses including that of our members (PWDs) to the extent that it negatively affected the working capital of our businesses leading to collapse of business…. But for those that are government workers, they were relatively better. (KII, Sokoto 2**).**
>
> […] Economically, those helping us could not assist us anymore as they used to do before the pandemic, due to their inability to go to work/shops during the period. You vividly noticed that such a person sympathises with you (PWD) and his intention to help or give alms is clear, but since he also finds it hard to feed his family, how do you expect such a person to assist others that are in need? We don't have other sources of income than begging (FGD Kwara; FGD Plateau 2)

Therefore, it could be concluded that policy measures such as lockdown, restriction of movement and social distancing have greatly affected access to source of income by PWDs, majority of whom rely on social support from the philanthropist.

To provide statistical evidence beyond the descriptive statistics using box graphs we run a simple t-test to ascertain whether there is difference in average monthly income of respondents before and after the COVID-19 pandemic. Table 5 revealed that the mean difference in income is about 5.62 with a significant t-value of 12.943 at 1%. This implies that the difference in mean monthly income before and after COVID-19 is statistically significant and therefore it could be concluded that that there is a significant difference between monthly income before and after COVID-19. The income before the outbreak of COVID-19 is higher than the level of income during COVID-19 with a mean value of 5.6. In other words, the outbreak of COVID-19 pandemic and policy measures meant to curb the spread of the virus have negative and significant impact on average income of the vulnerable household in northern Nigeria in line with Cheshire (2020).

Table 5.

Paired t-test on Average Monthly Income Before and After COVID-19

Paired t test		Mean	N	Std. dev.	Std. error			
Before		26.5196	2799	25.8124	.4897			
During		20.8996	2799	22.6696	.4300			
	Paired differences							
Paired t-test	Mean	Std. dev.	Std error of the mean	95% Confidence interval of the difference Lower	Upper	t	df	P(2-tailed)
Before - During	5.6200	22.8896	0.4342	4.7686	6.4714	12.94	2778	0.0000

Author's Computation using STATA 17, 06/05/2023.

Based on a sample of 312 PWDs in Bangladesh and Kenya, Cheshire (2020) concludes that COVID-19 has negatively affected the lives of PWDs. He further noted that 92.0% of the respondents identified factors like limited transport, restricted movement, lack of available necessities, low income, and lack of jobs as the major challenges during the pandemic. As noted by Cheshire (2020), this study also finds

that mobility restriction and lockdown jointly determine the hours of work per day, proxy for social capital as shown in Table 6.

Table 6.

Two-Sample Paired t-test on Hours of Works per day before and during COVID-19

Variable	N	Mean Hrs of Work	Std. dev.	Confidence Interval
Hours of work before COVID-19	2729	15.96336	16.42974	15.34666 - 16.58005
Hrs. of Work during COVID-19	2727	8.251558	8.19	7.944032-8.559085
Combined	5,456	12.10887	13.54191	11.74946-12.46828
Diff	7.711798	.3515189	8.400915	
Diagnostics t-Value		21.94 (0.000)		

Source: Author's Computation using STATA 17, 06/05/2023.

The results revealed that there is a significant difference in hours of work before and during the pandemic as suggested by a significant t-value of 21.94. From the table, the mean of hours of work before COVID-19 was approximately 15.96 hours, while during COVID-19, it significantly reduced to 8.25 hours. A further look at the table indicates that the mean difference between the two periods is 7.71 hours. This implies, on average, PWDs worked 7.71 fewer hours per day during COVID-19. The significant decline in the hours of work per day during COVID-19 compared to before the outbreak of COVID-19 suggests a significant negative impact on the livelihood's status of PWDs due to reduced working hours that culminate into loss of income/reduction in income. Thus, various policies such lockdown measures, social distance and mobility restrictions have negatively affected the available social capital of PWDs in the study area. Expectedly, significant percentage of PWDs relies on support from others to carry out their daily activities, however the social distance policy cut off this support and principle of survival of the fittest as argued in Social Darwinist theory.

The impact of the policy meant to curb the pandemic natural capital (total asset) measured by worth of landed property and available livestock was also examined. It was found that COVID-19 policy measures have not significantly affected the worth of landed property owned by PWDs based on an insignificant t-value of -0.9699 as shown in Table 7. This implies that there is no significance difference in the value of landed property owned by PWDS before and during the pandemic. This is not surprising, a larger percentage of PWDs in northern region survive based on transfer payment such charity obtained through support that virtually goes into consumption and health expenditures.

Table 7.

Simple Paired t-test on Value of Landed Property Before and During COVID-19

Paired t test	Mean	N	Std. dev.	Std. error
Before	37548.02	2356	270159.1	5565.87
During	45622.25	2358	300564	6189.63

	Paired differences							
Paired t test	Mean	Std. dev.	Std error of the mean	95% Confidence interval of the difference		t-value	df	P(2-tailed)
				Lower	Upper			
Before - During	8324.5	8245.6	-24394.05	33426.99	49746.71	-0.9699	2778	0.3321

Author's Computation using STATA 17, 06/05/2023.

In support of the above, a respondent acknowledged that they do not have any property to fall upon in the event of shocks because they depend on charity. In his own words, he narrated thus:

> I am the *Sarkin Guragu* (physically challenged) here in Kwara state. In fact, during the period of lockdown, we find it very hard to feed because we could not even go to the streets to beg for financial or food assistance…, even we do not have any property to dispose to smoothen our consumption. From all indications, no one is in a terrifying situation than us (PWDs) and we do not get any support from the government. It is apparent that we have suffered, and we pray to Almighty not to let such (pandemic) happen again (KII 8, Kwara).

A further investigation into the effect of COVID-19 policy measures on natural capital or total asset of PWDs using another proxy—value of available livestock—revealed a slight decreased in available value of livestock after COVID-19 (14.96 before and 13.89 after), with a mean difference of 1.07 as shown in Table 8. However, the t-test indicates that this difference is not statistically significant, indicating statistically not significant evidence to suggest that the value of livestock changed before and after COVID-19 based on the sample data.

Table 8.

Simple Paired t-test on Value of Livestock before and during COVID-19

Paired t-test	Mean	N	Std. dev.	Std. error
Before	14.96	2441	26.94	.5451
During	13.89	2419	24.85	.5052

	Paired differences							
Paired t-test	Mean	Std. dev.	Std. error	95% Confidence interval of the difference		t	df	P(2-tailed)
				Lower	Upper			
Before-During	.7436	2.5272	-0.3883	13.6965	15.1545	1.438	4858	0.0752

Source: Author's Computation using STATA 17, 06/05/2023.

From Table 7 and 8, it could be concluded that COVID-19 policy measures have not significantly affected the livelihood of PWDs proxy by natural capital, however, it significantly impacted the financial

capital and social capital measured by mean income and numbers of hours of work per day. Thus, on average, the livelihood status of PWDs has been significantly affected.

To elicit the differing impact of COVID-19 policy measures across the three geo-political zones, a disaggregated analysis was conducted. Figure 2 presents a comparison of livestock values in each of the three geo-political zones (North-West, North-East, and North-Central) in northern Nigeria before and during the COVID-19 pandemic.

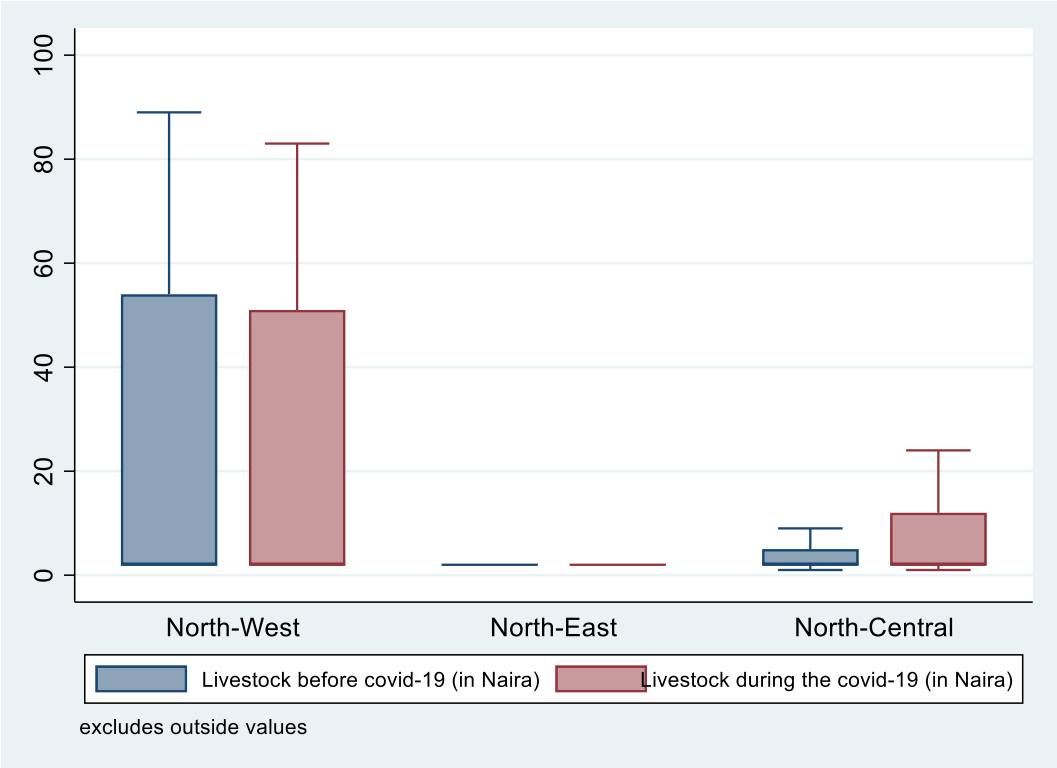

Figure 2. *Disaggregated analysis of Livestock values before and after the COVID-19 pandemic*

Source: Author's Computation using STATA 17, 06/05/2023.

Before the COVID-19 pandemic, the average livestock value in the Northwest was higher compared to the period during or after COVID-19. In addition, the interquartile range indicates a wider spread of livestock values. However, during COVID-19, there is a decline in the average value of livestock, while the interquartile established a reduction in the overall livestock value and its variability. Contrastingly, Figure 2 further revealed a very low livestock values in northeastern Nigeria, in both periods. This implies an insignificant difference in the values of available livestock during or after the pandemic compared to pre-pandemic periods, hence the pandemic did not significantly impact livestock value in this region. Surprisingly not, earlier before the outbreak of COVID-19 pandemic, the whole of northeastern states (particularly Adamawa, Borno, Yobe and Taraba States) have been ravaged by Boko-Haram insurgency and ethnic conflicts, resulting in displacement and disruption of sources of livelihoods. As a result, majority of households including PWDs have been displaced long before the outbreak of COVID-19, many have abandoned livestock farming as an alternative source of income due to conflict that makes the environment unsafe for grazing activities, while those with livestock have sold them long before the outbreak of COVID-19 as a coping strategy.

The situation in Northcentral is seemingly difference from the two other regions based on the revelation from Figure 2. The figure revealed that there is an increase in both the median value and the interquartile range, suggesting that livestock values have risen during the pandemic, with a significant increase in livestock values compares to pre-COVID-19 era which indicates a relatively low median livestock value

with a narrow interquartile range indicating less variation in livestock values. Thus, there is a regional difference in the impact of COVID-19 on livestock values. The North-West region experienced a notable decrease in livestock value, while the North-Central region saw an increase, however, the North-East region's livestock values remained largely unchanged.

Overall, examining the impact of COVID-19 policy measures using financial capital, social capital and natural capital/total asset measure by available landed property and value of livestock, the study could only established a significance reduction in the respondents levels of income and numbers of hours of work during COVID-19 pandemic compared to their level of income before the outbreak of COVID-19 in Northern Nigeria, while there is insignificant difference between the available landed property and value of livestock owned by PWDs before and after the outbreak of COVID-19. Surprisingly not, People with Disabilities have been subjected to series of livelihood challenges without adequate provision by the government for their support resulting in widening income gap between the able and the PWDs. No adequate provision has been made to assist this vulnerable group to overcome their challenges. Due to poor sources of income, which in most cases, comes through charity, just enough to meet their consumption needs the PWDs either have low of saving or at the extreme zero saving, as such their level of asset in terms of landed property or livestock is usually very low. Therefore, during shocks or stressors just like COVID-19 pandemic, this vulnerable group has nothing to fall upon for resilience, and as such they are the worse affected group.

The worsening impact of COVID-19 pandemic policy measures compounded by the existing predicaments of PWDS make government interventions a critical step in mitigating the effects of the pandemic not only on vulnerable households but also on PWDS. During this period, governments at all levels including Non-Governmental Organizations introduced social security policy such as food transfer, Conditional Cash Transfer (CCT), equipment support, free medicines among others, with the objectives of protecting and preventing households from the negative impact of the shocks. The availability and or accessibility of these social supports by PWDs and their adequacy were analysed. The results, as revealed in Figure 3, show that food distribution, among many others, recorded the highest frequency, followed by cash transfer. During the pandemic, the respondents seem to have access to food distribution specifically from the state government. Next to food distribution is CCT support provided by the Federal Government through the National Social Protection Agency during the pandemic, however majority of PWDs find it difficult to access this support due to lack of bank account poor level of education needed for online application. A respondent noted that:

> Very few PWDs got some social support during the lockdown. This is because the application is online and poor internet facilities frustrated majority of our people, Also, the means of communication were so poor that many targeted beneficiaries were not aware of the programmes, as such many could not apply for support. For those that were able to register, access to support becomes difficult due to physical distances (COVID-19 protocol) resulting in long queues which made it more difficult for PWDs and no special provision for PWDs. In such situations, how can a blind person do or disable with spinal cord injury gain access. Therefore, it is very hard for you to see more than 10 PWDs benefiting from support (KII 6, Sokoto).

> … access to food support is zero. The government on its side did not help matters, this is because when the palliative came, PWDs were not favourably considered. However, on the issue of distributing the palliatives, community leaders were charged with responsibilities of distributing palliatives to targeted beneficiaries, but these leaders failed to consider members of PWD group. This was based on the belief that the group has gotten its own special allocation from the government, but no one knows where these palliatives for PWDs were being distributed, so PWDs end up without getting support (KII 3, Kaduna).

The above is in line with the conclusion Hillgrove et al. (2021) that PWDs experience less access to health, education, and social services, while Smith (2011) evidenced that more than 70% of the PWDs find it difficult to access disability specific health services, resulting in declining level of their welfares.

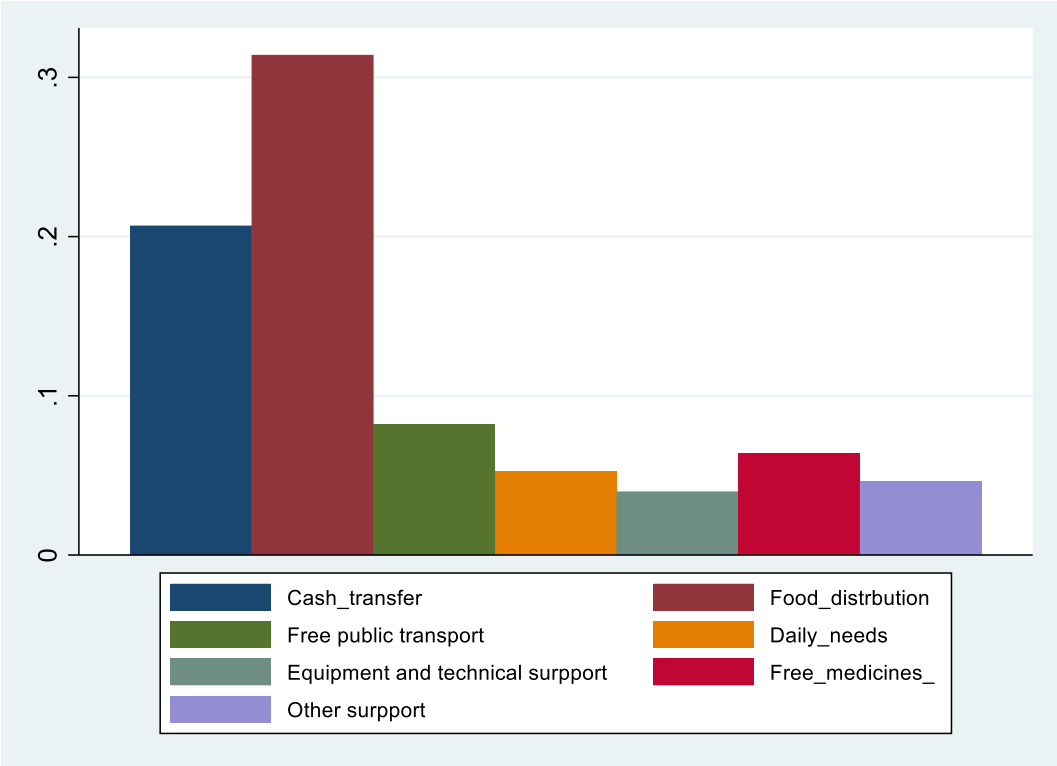

Figure 3. *Distribution of Responses on Availability of Social Security during COVID-19*

Author's Computation using STATA 17, 06/05/2023.

Other types of support are free public transport and medicines implemented by the federal and some state governments during the pandemic. However, the percentage of PWDs that were able to access these supports remain insignificant. For free public transport, about 10% benefited from the support while about 5% enjoyed the daily needs support. However, equipment support such as wheelchairs, bicycles, and cane sticks among others recorded the least percentage of responses of (less than 5%) even though majority of people with disabilities require medical support and equipment support for improving livelihood status. This is predicated on the fact that most PWDs have one or two underline ailments that require medication on a sustainable basis while some of them such as those with spinal cord injuries, the physically disabled persons could not engage in any activities without equipment support. Although, some respondents that were not having any underlined ailment and fortunate not to fall sick during the pandemic could not really confirm the difficulty involve in accessing medical support but that were sick share their experiences during the pandemic as narrated below:

> […] on medication there is one association called Nana Khadijah Centre they promised to support by giving us a card to be used to off-set our hospital charges and that of our immediate families like children, but nothing was giving, we are just with the card. ….. , I was with a friend who is also a PWD, and she is ill. There is another member of PWDs who was recommended to undergo surgery, and she approached the Centre, but she was denied access to the Centre (**KII 12, Sokoto)**
>
> On the medication, we also experienced great challenges because even if you have money to buy drugs, medical stores were shutdown, no matter the severity of your sickness, you cannot go to hospital for any medical support and the government has

> no provision for us. Even when they started opening their pharmacy during the gradual relaxation of the lockdown, the problem still persists because in our case we need to get someone to help us to get drugs you needed, but such a person is afraid of having contact with us (KII 4, Sokoto).
>
> […] Similarly, he narrated the case of those with visual disability that needed support of others to enable them access medications but due to COVID-19 protocol of physical distances and shutdown of public places like medicine stores and health institutions they could not access medication or medical care, and government failed to make provision for them. Other people who needed support and suffered during the outbreak of COVID-19 are Albinism. For them, access to skin checkups and care (sun cream lotion) was very difficult to get and totally inaccessible. Thus, COVID-19 outbreak drastically affected Albinos (KII 7, Kaduna)

Above explains the predicament of PWDs during COVID-19 due to inadequate social support from the government during the pandemic, and some of them resorted to the use of traditional medicines to cure some illness which further complicates their health issues.

Conclusions

The study is an analysis of the impact of COVID-19 pandemic on livelihoods status of People with Disabilities in Northern Nigeria based on a mixed-methods approach. The study administered 3,301 structured questionnaires across the three geo-political zones in northern Nigeria. The study used both descriptive statistics and simple paired t-test to analyze the quantitative data while content analysis was used to analyze qualitative data. The study will add value to the existing literature on the livelihoods impact of COVID-19 pandemic. The study underscores how policies measures meant to cushion the impact of disasters could produce unintended negative outcomes due to lack of inclusivity. For instance, the lockdown policy and restriction of movement have further exposed PWDs to shocks and cut off their sources of social support, while special arrangements were not put-in-place for those that survive on medications as earlier established by Chevance et al. (2020) and Olarinde et al., (2024). To best support this vulnerable group during disasters, policy makers should consider various proactive strategies and implement inclusive social protection programs to protect and prevent the vulnerable households from worsening livelihood status. The disaggregated analysis of the impact equally established differing impacts of COVID-19 policy measures across the three geo-political zones and calls for region specific policy and programs both in design and implementation. In potential future pandemic, a special taskforce (with significant numbers of PWDs as members) for diseases control should be set-up while social support for this vulnerable group should be needs specific.

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Conflicts of Interest

No conflict of interest has been declared by the authors.

Author Contribution

Corresponding author Muftau Olaiya Olarinde and authors Suleiman Yusuf B. Kura, Ismaila A. Danjuma, Maimuna U. Rabo, Abubakar Lawan: Conceptualization, data curation, investigation, methodology, writing original draft, review & editing.

Declaration of Competing Interest

This research benefits from TETFund NRF grants 2021

Ethics Approval

In the writing process of the study titled "**COVID-19 and livelihoods status of people with disabilities in Northern Nigeria: A mixed-methods**", the rules of scientific, ethical and citation were followed; it was undertaken by the author of this study that no falsification was made on the collected data. "Journal of Action Qualitative & Mixed Methods Research and Editor" had no responsibility for all ethical violations to be encountered, and all responsibility belongs to the author and that the study was not submitted for evaluation to any other academic publishing environment.

Institutional review board (IRB) approval

Usmanu Danfodiyo University Sokoto Research and Ethics Committee approved this research project under the number and date UDUS/UREC/2020/022.

Data Availability Statement

Anonymized data from this study can be made available on request from Olarinde.muftau@udusok.edu.ng