

Multidimensional Poverty and Its Determinants among Female-Headed Households under the Nigeria Community Action Recovery and Economic Stimulus (NG-CARES) Project in Katsina State, Nigeria

Hadiza Musa Turaki; Segun Adeola and A. H. Danmusa

Department of Agricultural Economics, Faculty of Agriculture, Federal University Dutsin-Ma, Katsina State, Nigeria.

Corresponding author: hadizaturaky@gmail.com

DOI: <https://doi.org/10.62154/ajasfr.2026.023.01019>

Abstract

Female-headed households remain among the most vulnerable segments of Nigeria's rural population, yet evidence on the extent and drivers of their multidimensional poverty within social-protection programme areas remains limited. This study examined the extent, determinants, and coping strategies of multidimensional poverty among female-headed households under the Nigeria Community Action Recovery and Economic Stimulus (NG-CARES) project in Katsina State, Northern Nigeria. A multistage purposive sampling technique was used to select six Local Government Areas across the three senatorial zones of the state, and primary data were collected from 91 female-headed households using a structured questionnaire. Data were analysed using descriptive statistics, the Alkire-Foster Multidimensional Poverty Index (MPI) methodology across the health, education, and living-standards dimensions, and a binary logistic regression model. Results showed that female-headed households are characterised by large household sizes (mean 18 persons), low monthly incomes, small farm holdings (mean 3.2 hectares), and low educational attainment (69% with no formal education). The incidence of multidimensional poverty was 89.01%, intensity was 61.38%, and the resulting MPI was 0.5464, markedly higher than comparable national and state-level estimates. The largest contributors to overall poverty were deprivations in asset ownership, electricity access, sanitation, and years of schooling. Household size significantly increased, while income significantly reduced, the odds of multidimensional poverty ($p < 0.05$); education, farming experience, land acquisition, farm size, cooperative membership, and livelihood diversification were not significant. Households relied predominantly on short-term coping strategies, particularly off-farm employment and borrowing from social networks, with limited engagement in long-term resilience-building measures. The study concludes that multidimensional poverty among female-headed households in Katsina State is severe and driven mainly by structural and household-level constraints, and recommends integrated, gender-sensitive interventions combining income support, household-size-adjusted targeting, and asset- and infrastructure-focused investment under NG-CARES.

Keywords: Multidimensional Poverty, Female-Headed Households, NG-CARES, Alkire-Foster Index, Katsina State, Coping Strategies.

Introduction

Poverty remains a significant global challenge, with millions of people living in conditions that impede their access to basic needs such as education, healthcare, and a decent standard of living. Although substantial progress has been made in reducing poverty worldwide, multidimensional poverty, which encompasses deprivations beyond income alone, persists, particularly in developing countries (Alkire & Foster, 2011). In Nigeria, poverty continues to be a critical issue affecting millions across the country, with women and rural populations often bearing the brunt of these hardships (National Bureau of Statistics [NBS], 2022). Female-headed households are especially vulnerable, owing to structurally limited access to land, credit, education, and remunerative employment, a pattern long recognised in the literature on the feminisation of poverty (Pearce, 1978).

In response to the economic shocks associated with the COVID-19 pandemic, the Federal Government of Nigeria, with World Bank support, introduced the Nigeria Community Action Recovery and Economic Stimulus (NG-CARES) project to cushion vulnerable households, including female-headed households, through livelihood grants, agricultural support, and social safety-net interventions (World Bank, 2022). However, empirical evidence on the extent to which multidimensional poverty persists among female-headed households within NG-CARES-covered communities, and on the specific factors driving this poverty, remains scanty, particularly in Katsina State, one of the poorest states in Northern Nigeria (NBS, 2022). A Multidimensional Poverty Index (MPI), which combines indicators across health, education, and living-standards dimensions, provides a more complete picture of deprivation than income-based measures alone, since it captures the overlapping disadvantages that poor households experience simultaneously (Alkire & Santos, 2010, 2014).

Existing Nigerian studies on the determinants of poverty typically pool male- and female-headed households together, or treat gender of household head as a single control variable within a larger sample, rather than modelling the determinants of poverty within female-headed households specifically. Comparable national and sub-national MPI estimates for example, an incidence of 63% and an MPI of 0.257 nationally (NBS & OPHI, 2022), and an incidence of approximately 76% among rural women nationally, driven mainly by deprivations in living standards (Jerumeh, 2024) provide useful benchmarks but do not isolate the experience of female headed households within a specific social-protection programme area. This study therefore analysed multidimensional poverty among female-headed households in the NG-CARES project in Katsina State, with the specific objectives of describing their socio-economic characteristics, estimating the incidence and severity of poverty, determining the overall MPI, identifying the determinants of multidimensional poverty, and examining the coping strategies adopted against it.

Materials and Methods

Study Area

The study was conducted in Katsina State, Northern Nigeria, located between longitudes 11° and 13° east of the Greenwich meridian and latitudes 6° and 9° north of the equator, with a total land area of 23,938 km² and a projected population of 10,368,500 (National Population Commission [NPC] & NBS, 2022). The state has approximately 863,000 farming families cultivating 1.64 million hectares, with cotton, cowpea, sorghum, millet, groundnut, rice, maize, wheat, and vegetables as the main crops. Approximately 82% of the population are farmers, mainly smallholders with an average farm size of 1–2 hectares, and the predominant ethnic groups are Hausa and Fulani.

Sampling Technique and Sample Size

A multistage purposive sampling technique was employed. Katsina State has three Agricultural Development Programme (ADP) zones (Ajiwa, Dutsin-Ma, and Funtua); two Local Government Areas (LGAs) were purposively selected from each zone based on relative security and accessibility, giving six LGAs (Katsina and Batagarawa from Zone I; Dutsin-Ma and Kurfi from Zone III; Kafur and Malumfashi from Zone II). In each LGA, NG-CARES beneficiaries are organised into Farmers Community Associations (FCAs); seven FCAs containing female beneficiaries were purposively selected, comprising 420 female participants, of whom 113 were female household heads. All 113 female-headed households were purposively sampled, of which 91 households completed the survey and were retained for analysis.

Data Collection

Primary data were collected using a structured questionnaire covering socio-economic characteristics (age, education, household size, primary occupation, farming experience, income), indicators of multidimensional poverty (child mortality, nutrition, years of schooling, school attendance, cooking fuel, sanitation, drinking water, electricity, and housing), determinants of poverty status (association membership, dependency ratio, education, extension contact, and insecurity), and coping strategies adopted by the households.

Analytical Techniques

Descriptive statistics (frequencies, percentages, means) were used to describe socio-economic characteristics and coping strategies. The Alkire-Foster Multidimensional Poverty Index (Alkire et al., 2015) was used to estimate the incidence, intensity, and overall MPI of poverty. A binary logistic regression model was used to identify the determinants of multidimensional poverty status.

Following Alkire and Santos (2010, 2014), three dimensions education, health, and standard of living comprising ten indicators, were used to compute the MPI, with each household scored 1 if deprived and 0 if not deprived on each indicator, weighted as shown in Table 1. A household's weighted deprivation score was computed as:

$$C_i = w_1l_1 + w_2l_2 + \dots + w_nl_n \dots\dots\dots (1)$$

where $l_i = 1$ if the household is deprived in indicator i and 0 otherwise, w_i is the weight attached to indicator i , and C_i is the censored deprivation score of the household. A poverty cut-off (k) of 0.333 was applied following Alkire et al. (2015): households with $C_i \geq k$ were classified as multidimensionally poor. The headcount ratio (incidence, H) was computed as:

$$H = q / n \dots\dots\dots (2)$$

where q is the number of multidimensionally poor households and n is the total sample size. The intensity of poverty (A), the average proportion of weighted deprivations experienced by the poor, was computed as the average censored deprivation score among poor households, and the adjusted MPI was computed as:

$$MPI = H \times A \dots\dots\dots (3)$$

The determinants of multidimensional poverty status were estimated using a binary logistic regression model, specified as:

$$Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \beta_5X_5 + \beta_6X_6 + \beta_7X_7 + \beta_8X_8 + \beta_9X_9 + \beta_{10}X_{10} + U \dots\dots\dots (4)$$

where Y is the multidimensional poverty status of the household (1 = non-poor, 0 = poor); X_1 = age (years); X_2 = household size (number of persons); X_3 = education (years of formal schooling); X_4 = household income (₦); X_5 = years of cooperative membership; X_6 = farm size (ha); X_7 = land acquisition (1 = secure, 0 = otherwise); X_8 = livelihood diversification status (1 = diversified, 0 = otherwise); X_9 = farming experience (years); X_{10} = primary occupation (1 = farming, 0 = otherwise); β_0 is the intercept, β_1 – β_{10} are coefficients, and U is the error term.

Results and Discussion

Socio-economic Characteristics of Female-Headed Households

The mean age of respondents was 41 years, with 43% aged 35–47 years, indicating that most female household heads were within their economically active years (Table 2). Households were large, with a mean size of 18 persons, reflecting the extended-family living arrangements common among rural households in Northern Nigeria. The mean monthly income was ₦27,499.50, with 51% of households earning between ₦5,000 and ₦19,999. Farm holdings were small (mean 3.2 ha; 89% cultivating 1.0–2.4 ha), and mean farming experience was 11 years, with 48% of respondents reporting 8–13 years of experience. Cooperative membership was comparatively recent, with 64% having 2–6 years of membership, which may limit access to accumulated credit and training benefits.

Table 2: Quantitative socio-economic characteristics of female-headed households.

Variable	Category	Frequency (n=91)	Percentage (%)
Age (years)	22–34	36	40
	35–47	39	43
	48–60	16	17
Household size	5–13	41	45

Variable	Category	Frequency (n=91)	Percentage (%)
	14–22	45	49
	23–31	5	6
Monthly income (₦)	5,000–19,999	46	51
	20,000–34,999	40	44
	35,000–49,999	5	5
Farm size (ha)	1.0–2.4	81	89
	2.5–3.9	8	9
	4.0–5.4	2	2
Farming experience (years)	2–7	38	42
	8–13	44	48
	14–20	9	10
Cooperative membership (years)	2–6	58	64
	7–11	30	33
	12–16	3	3

Source: Data analysis, 2025.

A high proportion of respondents (93%) had access to credit, and 55% diversified their livelihoods, while 45% depended on a single income source. Land was acquired predominantly through inheritance (68%), consistent with the widely documented pattern in which customary land tenure systems limit women's independent land ownership across Nigeria. Educational attainment was low: 69% of respondents had no formal education, 16% had primary education, 11% had secondary education, and only 4% had tertiary education, reflecting persistent gender disparities in educational access in the study area.

Multidimensional Poverty Status

The majority of households (86%; 79 of 91) were deprived in asset ownership, while 71.4%, 65.9%, and 45.5% were deprived in electricity access, sanitation, and years of schooling, respectively; deprivation was concentrated in the living-standards dimension, with comparatively few households (9) deprived in the health dimension through nutrition. The incidence of multidimensional poverty (H) was 0.8901 (89.01%), the intensity of deprivation (A) was 0.6138 (61.38%), and the resulting MPI was 0.5464 (Table 3).

Table 3: Multidimensional poverty indices of female-headed households.

Variable	Value
Headcount ratio / Incidence (H)	0.89
Intensity of poverty (A)	0.61
Multidimensional Poverty Index (MPI = H × A)	0.5464
Multidimensionally poor households	89.0%
Multidimensionally non-poor households	11.0%

Source: Data analysis, 2025.

These estimates are markedly higher than comparable benchmarks. The national MPI report recorded a national incidence of 63% and an MPI of 0.257, implying an average intensity of about 41% (NBS & OPHI, 2022), while rural women nationally have been found to experience an incidence of approximately 76%, driven mainly by living-standards deprivations (Jerumeh, 2024). The considerably higher incidence, intensity, and MPI recorded in the present study indicate that female-headed households under NG-CARES in Katsina State are substantially more deprived than the general population and rural women nationally, underscoring the acute vulnerability of this specific population.

Determinants of Multidimensional Poverty

The logistic regression model was statistically significant overall (LR $\chi^2(10) = 19.60$, $p = 0.033$), with a Pseudo R^2 of 0.3122, indicating a reasonably good fit for cross-sectional socio-economic data (Table 4).

Table 4: Determinants of multidimensional poverty among female-headed households (n = 91; LR $\chi^2(10) = 19.60$, $p = 0.033$; Pseudo $R^2 = 0.3122$). Significant at 5%.

Variable	Odds ratio	Std. error	z	p-value
Education (edu)	1.429	0.935	0.55	0.585
Farming experience (exp)	1.016	0.162	0.10	0.917
Land acquisition (landacq)	1.679	0.985	0.88	0.377
Cooperative membership (yrscoop)	0.992	0.280	-0.03	0.978
Primary occupation (prioccop)	0.440	0.404	-0.89	0.372
Income	0.998	0.001	-2.22	0.027*
Age	0.928	0.374	-0.18	0.855
Household size (hhsz)	6.916	5.573	2.40	0.016*
Livelihood diversification (diver)	3.753	4.854	1.02	0.306
Farm size (fsize)	0.794	0.938	-0.19	0.845
Constant	0.019	0.137	-0.56	0.577

Source: Data analysis, 2025.

Household size significantly and positively influenced the likelihood of multidimensional poverty (OR = 6.916, $p = 0.016$): an additional household member increased the odds of being multidimensionally poor by almost sevenfold, consistent with the widely observed pattern in which larger households face a heavier dependency burden and greater strain on shared resources. Income significantly reduced the odds of multidimensional poverty (OR = 0.998, $p = 0.027$), confirming that cash income remains a direct and effective shield against multidimensional deprivation, a pattern also evident in energy-poverty dimensions of multidimensional deprivation among Nigerian households (Ozughalu & Ogwumike, 2019).

Education, farming experience, land acquisition, cooperative membership, primary occupation, livelihood diversification, and farm size were not statistically significant determinants in this sample. The insignificance of education suggests that, in this context, education alone may not guarantee poverty reduction among rural women where broader economic opportunities remain limited, while the insignificance of farming experience suggests that experience does not automatically translate into improved welfare among smallholder women farmers in the study area. Taken together, these results suggest that multidimensional poverty among female-headed households in Katsina State is driven more by structural and household-level constraints income adequacy and dependency burden than by individual human-capital characteristics, a pattern consistent with the Sustainable Livelihoods Framework, in which vulnerability context (gender, household structure, resource access) shapes poverty outcomes more strongly than individual factors such as education or experience.

Coping Strategies

Households relied predominantly on short-term, consumption-smoothing coping strategies. Engaging in off-farm employment and borrowing from friends, relatives, and neighbours were each adopted by 91% of households (ranked joint first), while forming community self-help groups was adopted by 78% (ranked third). Comparatively fewer households pursued longer-term resilience-building strategies such as diversification of farm enterprises (41%), migration to areas with better economic activity (33%), or skill acquisition (33%), indicating that female-headed households in the study area rely mainly on immediate survival tactics rather than long-term adaptive measures.

Conclusion

Female-headed households under the NG-CARES project in Katsina State face profound and widespread multidimensional poverty that significantly exceeds national, state, and general-population benchmarks. Their socio-economic profile is characterised by large household sizes, low incomes, small farm holdings, and low educational attainment. Household size and income, rather than individual characteristics such as education, farming experience, or land access, were the significant drivers of multidimensional poverty, reflecting structural and gendered constraints within the patriarchal agrarian system. Existing coping mechanisms remain largely short-term and reactive rather than resilience-building. The study recommends integrated, gender-sensitive, multi-sectoral interventions under NG-CARES that combine income support scaled to household size, targeted investment in asset ownership, electricity access, sanitation, and schooling, continued support for cooperative membership and land access as resilience-building measures, and deliberate strengthening of formal savings, credit, and insurance mechanisms to shift household coping away from short-term borrowing toward sustainable resilience.

Data Availability Statement

The data used to support the findings of this study are available from the corresponding author upon reasonable request.

Conflicts of Interest

The authors declare that there are no conflicts of interest regarding the publication of this article.

Acknowledgments

The authors thank the female-headed households in Katsina State who participated in this study, the Katsina State NG-CARES Coordinating Unit for facilitating access to Farmers Community Associations, and the Department of Agricultural Economics, Federal University Dutsin-Ma, for institutional support. No external funding was received.

References

- Alkire, S., & Foster, J. (2011). Counting and multidimensional poverty measurement. *Journal of Public Economics*, 95(7–8), 476–487. <https://doi.org/10.1016/j.jpubeco.2010.10.006>
- Alkire, S., Foster, J., Seth, S., Santos, M. E., Roche, J. M., & Ballon, P. (2015). *Multidimensional poverty measurement and analysis*. Oxford University Press.
- Alkire, S., & Santos, M. E. (2010). *Acute multidimensional poverty: A new index for developing countries* (OPHI Working Paper No. 38). University of Oxford.
- Alkire, S., & Santos, M. E. (2014). Measuring acute poverty in the developing world: Robustness and scope of the Multidimensional Poverty Index. *World Development*, 59, 251–274.
- Jerumeh, T. R. (2024). Incidence, intensity and drivers of multidimensional poverty among rural women in Nigeria. *Heliyon*, 10(3), Article e25147. <https://doi.org/10.1016/j.heliyon.2024.e25147>
- National Bureau of Statistics. (2022). *Poverty and inequality in Nigeria: Executive summary*. NBS Publications.
- National Bureau of Statistics, & Oxford Poverty and Human Development Initiative. (2022). *Nigeria multidimensional poverty index: Executive summary*. NBS.
- National Population Commission, & National Bureau of Statistics. (2022). *Population and demographic data for Katsina State*. NPC/NBS.
- Ozughalu, U. M., & Ogwumike, F. O. (2019). Extreme energy poverty incidence and determinants in Nigeria: A multidimensional approach. *Social Indicators Research*, 142(3), 997–1014. <https://doi.org/10.1007/s11205-018-1954-8>
- Pearce, D. (1978). The feminization of poverty: Women, work, and welfare. *Urban and Social Change Review*, 11(1–2), 28–36.
- World Bank. (2022). *Nigeria COVID-19 Action Recovery and Economic Stimulus (NG-CARES)*. World Bank.