



Journal of Health and Medical Sciences

Oshaji, P., Nwangwu, C., & Mohammed, O. A. (2025). Drivers of Catastrophic Health Expenditure Among Women of Reproductive Age in Ekiti State, Nigeria. *Journal of Health and Medical Sciences*, 8(4), 58-71.

ISSN 2622-7258

DOI: 10.31014/aior.1994.08.04.247

The online version of this article can be found at:

<https://www.asianinstituteofresearch.org/>

Published by:
The Asian Institute of Research

The *Journal of Health and Medical Sciences* is an Open Access publication. It may be read, copied, and distributed free of charge according to the conditions of the Creative Commons Attribution 4.0 International license.

The Asian Institute of Research *Journal of Health and Medical Sciences* is a peer-reviewed International Journal. The journal covers scholarly articles in the fields of Medicine and Public Health, including medicine, surgery, ophthalmology, gynecology and obstetrics, psychiatry, anesthesia, pediatrics, orthopedics, microbiology, pathology and laboratory medicine, medical education, research methodology, forensic medicine, medical ethics, community medicine, public health, community health, behavioral health, health policy, health service, health education, health economics, medical ethics, health protection, environmental health, and equity in health. As the journal is Open Access, it ensures high visibility and the increase of citations for all research articles published. The *Journal of Health and Medical Sciences* aims to facilitate scholarly work on recent theoretical and practical aspects of Health and Medical Sciences.



ASIAN INSTITUTE OF RESEARCH
Connecting Scholars Worldwide

Drivers of Catastrophic Health Expenditure Among Women of Reproductive Age in Ekiti State, Nigeria

Peter Oshaji¹, Chike Nwangwu¹, O. A. Mohammed¹

¹NOIPolls Limited, Abuja, Nigeria.

Abstract

Catastrophic health expenditure (CHE) remains a major barrier to universal health coverage (UHC) in low- and middle-income countries (LMICs), disproportionately affecting women of reproductive age who often shoulder the burden of healthcare costs within households. This study examined the determinants of CHE among women of reproductive age in Ekiti State, Nigeria, under the State's health insurance scheme (ULERAWA). Using data from 232 women of reproductive age, logistic regression, cross-tabulation and chi-square test were applied to assess the influence of socio-demographic, household, and health system-related variables on CHE. Results revealed that all socio-demographic characteristics, including urban-rural residence, age, marital status, ethnicity, education, and occupation, were significantly associated with CHE ($p < .05$). Household factors such as headship (female headed households), household size, monthly income, and wealth quintile also emerged as strong predictors, indicating that both poverty and household structure contribute to financial vulnerability. Among health system determinants, type of treatment facility, frequency of utilization, and illness episodes significantly predicted CHE. The cost of drugs was the single most influential driver ($OR = 35.9$, $p < .001$), underscoring the critical role of pharmaceutical expenses. Indirect costs such as transport further heightened household risk. These findings align with cross-country evidence from Ghana, Kenya, Rwanda, and Ethiopia, where drug costs, recurrent illness, and indirect service expenses persist as major causes of CHE despite insurance coverage. The study concludes that while ULERAWA has expanded access, its financial protection function remains limited. Policy reforms should prioritize subsidized essential medicines, coverage of indirect costs, and targeted support for low-income and female-headed households to strengthen equity and resilience against CHE.

Keywords: Drivers of Catastrophic Health Expenditure, Ulerawa Health Insurance, Women of Reproductive Age, Out-of-Pocket Payments, Ekiti State-Nigeria, NOIPolls, Universal Health Coverage (UHC)

1. Introduction

Catastrophic Health Expenditure (CHE) is a health concept that implies a situation where the cost of healthcare consumes a disproportionate share of household income. Simply, it is when health spending by households exceeds 10% of total income and/or 40% of non-food expenditure, thereby forcing households to sacrifice essential needs, incur debt, or fall into poverty (Xu et al., 2003; Wagstaff et al., 2018). This poses a significant barrier to achieving Universal Health Coverage (UHC) in many low- and middle-income countries (LMICs), where out-of-pocket (OOP) payments remain the primary means of healthcare financing. In fact, beyond financial thresholds, CHE serves as a marker of systemic failures in financial risk protection, reflecting gaps in coverage, service delivery inefficiencies, and weak social protection mechanisms within the health system (World Health Organization [WHO], 2021).

In Nigeria, over 70% of healthcare spending is paid out-of-pocket by households (NBS, 2020), and health insurance coverage remains alarmingly low where less than 5% of the population enroll for health insurance, households frequently bear the brunt of medical costs, increasing vulnerability to financial distress (National Bureau of Statistics [NBS], 2020). Women of reproductive age (15–49 years) are particularly susceptible to CHE due to their unique healthcare needs, including maternal, reproductive, neo-natal and child health services (Onoka et al., 2015). These interactions often come with both direct and indirect costs—ranging from user fees to transportation, informal payments, and lost income—that cumulatively strain household finances (WHO, 2021). Despite targeted maternal health programs, women of reproductive age in Nigeria remain at risk of financial hardship or even avoidance of care, especially in the absence of robust safety nets (Inyang et al., 2025; WHO, 2021; Aregbeshola & Khan, 2018).

Beyond health service use, socio-economic and household characteristics play a critical role in determining vulnerability to catastrophic health expenditure among women of child-bearing age. Empirical studies at the national level in Nigeria and other LMICs show that households with low income, large family sizes, high dependency ratios, and those residing in rural areas are significantly more likely to incur CHE (Aregbeshola & Khan, 2018; Uzochukwu et al., 2016). Education level of the household head or of women, employment status, and type of occupation also influence health-seeking behaviour and capacity to pay for services—with informal sector workers and subsistence farmers often bearing disproportionate out-of-pocket costs (Onoka et al., 2015; Adeyanju et al., 2021). Furthermore, household ownership of assets and access to social safety nets determine financial resilience in the face of medical shocks, while gendered power dynamics affect decision-making on when and where to seek care. In contexts where male partners control financial resources, women's healthcare utilization may be delayed or foregone, thereby increasing the likelihood of adverse health outcomes and future catastrophic expenditures (Sen et al., 2007; Adeyanju et al., 2021).

However, both national and state-level social health insurance schemes are being rolled out to reduce the burden of out-of-pocket (OOP) healthcare spending, especially among vulnerable groups in Nigeria. The National Health Insurance Authority (NHIA) plays a central role in advancing universal health coverage (UHC) through several programs. One key initiative is the Basic Health Care Provision Fund (BHCPF), a catalytic funding mechanism aimed at expanding access to primary healthcare, particularly for poor households and those in the lowest income brackets. The BHCPF is delivered through three implementing gateways: the National Primary Health Care Development Agency (NPHCDA), the National Health Insurance Scheme (NHIS), and the National Emergency Medical Treatment (NEMT) (Inyang, Chukwudum, & Edet, 2025; WHO, 2022). Additionally, the NHIA manages the Vulnerable Group Fund, which provides coverage for disadvantaged populations such as pregnant women, children under five, the elderly, and people with disabilities. The Equity Fund, as part of the BHCPF, is expected to further reduce financial barriers to healthcare access among women of reproductive age (Inyang et al., 2025 & WHO, 2022). But despite these financial interventions across all the Nigerian states, women of reproductive age in Ekiti State are still vulnerable to catastrophic health expenditures (Ipinnimo & Durowade, 2022; Ajayi, Ibirongbe, Ipinnimo, Solomon, Ibikunle, & Obiagwu, 2021).

In Ekiti State, Nigeria, significant challenges in healthcare access and coverage persist, highlighted by alarmingly low health insurance enrollment rates. According to the Multiple Indicator Cluster Survey (2021), only 1% of men and 1.3% of women in Ekiti State are covered by any form of health insurance, emphasizing the urgent need for strategic interventions to strengthen healthcare systems and expand access to affordable, comprehensive services. This also demonstrates that where maternal and child health services should receive more attention, financial barriers among households persist, limiting women's access to essential maternal and reproductive healthcare services (Ekiti State Ministry of Health [ESMH], 2022). Despite government interventions such as the Ekiti State Health Insurance Scheme (EKHIS), many women still experience high OOP payments, leading to catastrophic spending (EKHIS, 2024; Inyang et al., 2025; WHO, 2021; Aregbeshola & Khan, 2018).

To address these gaps, Ekiti State government introduced the ULERAWA Scheme in 2022, a publicly funded, non-contributory health insurance program under the broader Ekiti State Health Insurance Scheme (EKHIS). ULERAWA targets vulnerable groups—including pregnant women, under-five children, and the elderly—by

providing free access to essential services in all public facilities in the state. Notably, the scheme prioritizes services that contribute to the burden of disease in the state including malaria and Maternal and Neonatal Care Services along the Maternal and Neonatal Health (MNH) continuum, including antenatal care, skilled birth attendance, postnatal care, and immunizations (EKHIS, 2024). Since its launch, 510,276 individuals have accessed services under ULERAWA, with over 380,488 utilizations recorded in 2024 alone, according to the EKHIS database. These trends signal growing demand and improved uptake of high-impact health services, particularly among previously underserved populations.

However, despite the Ekiti State's government commitments to universal health coverage, service utilization statistics, growing anecdotal and empirical evidence (EKHIS, 2024; ESMH, 2022; Aregbeshola & Khan, 2018; Inyang et al., 2025) reported that many women of reproductive age still experience catastrophic health expenditures, even while enrolled in Ulerawa health insurance scheme. This raises fundamental questions about the scheme's (Ulerawa Health Insurance Scheme) effectiveness in delivering true financial protection. Informal payments, referral costs, service exclusions, and gaps in awareness or scheme enrollment may all contribute to persistent out-of-pocket spending. Also, financial decision-making within households—often influenced by male partners—plays a crucial role in whether and when women seek care, and how costs are managed (Sen et al., 2007 & Adeyanju et al., 2021). Rural women, those with limited education, or those reliant on informal care providers are especially vulnerable to CHE (WHO, 2021 & Uzochukwu et al., 2016).

It is also worthy of note that, gender disparities further exacerbate CHE risks, as women often have lower economic empowerment and decision-making autonomy regarding healthcare expenditures (Sen et al., 2007). Studies in Nigeria highlight that women in rural areas and those with lower education levels are more likely to face CHE due to limited financial resources and reliance on informal healthcare providers (Uzochukwu et al., 2016). Additionally, male partners often control household finances, influencing women's access to funds for healthcare (Adeyanju et al., 2021).

Understanding the role of household decision-making in health financing is crucial, as such dynamics can either mitigate or worsen the risk of catastrophic health expenditure (CHE) for women of child-bearing age. Existing national studies, such as Aregbeshola & Khan (2018), Onoka et al. (2015), Uzochukwu et al. (2016), and Adeyanju et al. (2021), have examined the incidence and correlates of CHE in Nigeria. However, to the best of our knowledge few studies (Ipinnimo & Durowade, 2022; Ajayi et al., 2021; Ogundare, Taiwo, Olatunya, & Afolabi, 2022; Ajayi, Ipinnimo, Esan, Solomon, & Olanrewaju, 2022) have explored the issue of CHE at a sub-national level and through a gender-sensitive lens within the context of general health insurance schemes without looking at CHE from pro-poor non-contributory insurance models like ULERAWA. These reviewed studies did not also analyze CHE from the perspective of women of reproductive age due to their vulnerability to out-of-pockets spending on healthcare services especially in the households headed by female as it is being done in this research. Unlike the studies conducted by Ipinnimo and Durowade (2022), Ajayi et al. (2021), Ogundare et al. (2022) and Ajayi et al. (2022), this research opts out to analyze the determinants of catastrophic health expenditure among women of reproductive age in Ekiti State. By situating the research within the context of ULERAWA's implementation and leveraging administrative data from EKHIS, the research provides critical insight into the financial experiences of women of reproductive age on maternal and reproductive health services in the study locations, the performance of pro-poor, non-contributory insurance models, and the broader implications for equitable health financing reforms in Nigeria.

2. Literature Review

This study is underpinned by a combination of Grossman's Health Capital Model (1972), Andersen's Behavioural Model of Health Services Use (1995), and the WHO Health Financing Framework (2010), complemented by insights from Gender and Development Theory (1988). According to Grossman, health is both a consumption good and a capital good, and households allocate limited resources to maximize health outcomes within budgetary constraints. This implies that women of reproductive age, particularly in low-resource settings, often face difficult trade-offs between healthcare spending and other essential needs, exposing them to the risk of catastrophic health expenditure (CHE) when healthcare costs surpass their financial capacity (Grossman, 1972; Wagstaff et al., 2018).

Andersen's Behavioural Model emphasizes that healthcare utilization is shaped by predisposing factors (e.g., age, education, marital status), enabling factors (e.g., income, employment status, health insurance coverage), and need factors (e.g., pregnancy, illness episodes). These socio-demographic variables directly determine whether women seek care and the likelihood of incurring CHE (Andersen, 1995; Aregbeshola & Khan, 2018; Inyang et al., 2025; Ajayi et al., 2022).

At the system level, the WHO Health Financing Framework highlights the role of financial risk protection through revenue pooling and insurance coverage in preventing households from falling into poverty due to healthcare payments (WHO, 2021; Adeyanju, Tubeuf, & Ensor, 2021). In Nigeria, weak financial protection mechanisms and high reliance on out-of-pocket (OOP) payments exacerbate the vulnerability of women to CHE, particularly for maternal and reproductive health services (Onoka et al., 2015; Uzochukwu et al., 2016; Ipinnimo & Durowade, 2022; Ajayi et al., 2021; Ogundare et al., 2022; Ajayi, Ipinnimo, Esan, Solomon, & Olanrewaju, 2022). Further, insights from Gender and Development (GAD) theory reveal that women's lower bargaining power, unequal access to resources, and gendered health needs increase their susceptibility to catastrophic spending compared to men (Sen, Ostlin, & George, 2007). Collectively, these frameworks underscore how socio-demographic characteristics, healthcare system weaknesses, and gender dynamics interact to influence the determinants of catastrophic health expenditure among women of reproductive age in Ekiti State.

Catastrophic Health Expenditure (CHE) has become an essential indicator for assessing financial risk protection in health systems globally. Defined as out-of-pocket (OOP) spending that exceeds a critical share of household income or consumption—commonly >10% of total income or >40% of non-food expenditure (Xu et al., 2003; Wagstaff et al., 2018)—CHE not only reflects economic shocks at the household level but also demonstrates the degree of inequity within health systems. CHE is particularly prevalent in low- and middle-income countries (LMICs), where OOP remains the dominant source of health financing (WHO, 2021). Evidence across LMICs consistently shows that high OOP expenditures push households into poverty, with vulnerable groups disproportionately affected. Xu et al. (2003) estimated that nearly 150 million people globally suffer financial catastrophe annually due to healthcare spending, while 100 million are pushed into poverty. Subsequent multi-country analyses by Wagstaff et al. (2018) reinforce the persistence of CHE, despite global commitments to Universal Health Coverage (UHC). Studies highlight that reliance on OOP payments and limited health insurance coverage remain the strongest predictors of CHE incidence in LMICs (Kankeu et al., 2013 & van Doorslaer et al., 2007).

Women, especially those of reproductive age, face heightened risk of CHE due to unique healthcare demands, including maternal, neonatal, and child health needs (Onoka et al., 2015). Beyond direct costs, indirect expenses such as transport, lost productivity, and informal fees exacerbate women's vulnerability (Sen et al., 2007). Gender disparities in financial autonomy further compound risks: in many settings, several men control household finances, limiting women's decision-making power regarding healthcare expenditure (Adeyanju et al., 2021). These dynamics are pronounced in sub-Saharan Africa, where patriarchal norms, low female labor-force participation, and rural-urban inequalities intersect to exacerbate CHE risks for women of child-bearing age (Uzochukwu et al., 2016 & Ajayi et al., 2022).

Nigeria's health system remains heavily dependent on OOP financing, which accounts for over 70% of current health expenditures (NBS, 2020). Studies at the national level reveal widespread CHE across income groups, though poorest households bear the heaviest burden (Aregbeshola & Khan, 2018). Onoka et al. (2015) and Ajayi et al. (2022) also found that maternal health services, despite targeted subsidies, continue to expose women of reproductive age to financial hardship. Uzochukwu et al. (2016) highlighted how rural women and households with low educational attainment are especially susceptible to CHE, underscoring inequities in financial risk protection. In Nigeria, state-level experiences vary significantly due to differences in healthcare financing reforms and health insurance uptake. Ekiti State exemplifies these challenges, with health insurance coverage rates below 2% (Multiple Indicator Cluster Survey [MICS], 2021). The Ekiti State Health Insurance Scheme (EKHIS) and the ULERAWA initiative—launched in 2022 to provide free, non-contributory coverage for vulnerable groups—represent targeted pro-poor strategies. However, anecdotal evidence suggests persistent OOP spending, even among beneficiaries, due to informal fees, referral costs, and limited coverage scope (Ekiti State Ministry of

Health, 2022). This raises concerns about whether ULERAWA adequately mitigates CHE for women of reproductive age in Ekiti State. This among other issues informed the need to investigate the drivers of catastrophic health expenditures among women of reproductive age in Ekiti State.

While previous empirical studies in Nigeria, such as Onoka et al. (2015), Aregbeshola & Khan (2018), Uzochukwu et al. (2016), and Adeyanju et al. (2021), have examined the incidence and correlates of catastrophic health expenditure (CHE), most of these reviewed studies focus on national aggregates, overlooking sub-national variations where contextual factors strongly influence outcomes of CHE. In addition, few studies (Ipinnimo & Durowade, 2022; Ajayi et al., 2021; Ajayi et al., (2022); Ogundare et al., (2022) & Inyang et al., 2025) have applied a rural and urban sensitive lens to understand how household financial decision-making affects women of reproductive age vulnerability to CHE in Ekiti State. The empirical studies reviewed in this research did not focus on drivers of catastrophic health expenditures among women of reproductive age who constitute the most vulnerable groups to CHE in the Nigerian demographic settings.

However, the thesis in this research is that there is limited empirical evidence on how non-contributory health insurance schemes (Ulerawa) mitigate catastrophic health spending among women of reproductive age at the state level, and none has specifically investigated the ULERAWA Health Insurance Scheme in Ekiti State. This research addresses this gap by examining the drivers of CHE among women of reproductive age in Ekiti State within the context of ULERAWA's health insurance implementation. By centering on women's financial experiences and health-seeking behaviour, it provides a nuanced understanding of household dynamics and their implications for equitable health financing. Additionally, this study equally generates evidence on the effectiveness of pro-poor, non-contributory insurance models in mitigating CHE at the sub-national level—an area currently underexplored in Nigerian health financing literature.

3. Research Methods

3.1 Study Area

Ekiti State, situated in southwestern Nigeria, is largely agrarian and characterized by high poverty rates, which increase household vulnerability to financial shocks arising from health-related expenses (NBS, 2020). Despite the state government's efforts to implement pro-poor health policies, significant gaps in coverage and delays in enrollment among women of reproductive age within these schemes continue to persist (Ekiti State Ministry of Health, 2024). The selection of the study area is justified by empirical evidence from the Ekiti State Ministry of Health (2024), which reported a low level of maternal and reproductive health services utilization among women of child-bearing age enrolled in the *Ulerawa Health Insurance Program*. Additionally, findings from Ogundare et al. (2022) and Oluwatayo and Adeyemi (2021) further motivate this choice, as their studies revealed that over 30% of households in Ekiti State experience catastrophic health expenditure (CHE), with female-headed households being disproportionately impacted.

3.2 Sampling

We conducted a cross-sectional household-based study across the three senatorial districts of the state—Ekiti Central, Ekiti North, and Ekiti South. The sample size was determined using the Raosoft Calculator for estimating single proportions in a population survey. Based on a 95% confidence level, a 5% margin of error, and an assumed population proportion of 50%, the required sample size was 232 respondents. A multi-stage sampling technique was adopted to sample 232 women of reproductive age across the study area. Among the respondents, 142 (61.2%) were household heads, while 90 (38.8%) resided in households headed by their spouses. The sampling methodology employed in this research is further described as follows:

- i. Stage One: A stratified purposive sampling technique was employed to select three Local Government Areas (LGAs)—one urban and two rural LGAs—from each of the three senatorial districts in the state.

- ii. Stage Two: A systematic random sampling method was used to select households within each cluster. A sampling interval of every 5th household was applied in the urban clusters, while every 3rd household was selected in the rural clusters.
- iii. Stage Three: Within the selected households, women of reproductive age (18 years and above) were purposively sampled as respondents.

3.3 Data Collection and Management

Prior to fieldwork, ethical approval for the study was obtained from the appropriate State Health Research Ethics Committee. With the support of relevant State Ministries and Departments, official letters of introduction were subsequently sent to the Chairmen of all selected Local Government Areas (LGAs) to seek their cooperation and endorsement for the household survey. In each community, advocacy visits were conducted to the Community Heads/Chiefs to inform them about the purpose, objectives, and ethical considerations of the study, and to obtain their community-level consent. These engagements enhanced understanding of the importance and benefits of the survey to the communities and the State, thereby fostering local ownership and participation. Furthermore, local guides were mobilized within each community to accompany the research team and facilitate the ethical and culturally sensitive administration of the survey across all study locations.

Household selection was carried out by trained enumerators a week before the data collection exercise commenced, this is to facilitate accuracy of the data being collected and provide comprehensive sampling frame for subsequent surveys. In addition, to ensure confidentiality and data integrity, each questionnaire was assigned a unique identification code to de-identify respondents' personal information. Enumerators were paired and grouped by Local Government Area (LGA), with one designated as a super-enumerator to serve as the field leader. Each senatorial district, comprising three LGAs, was supervised by an assigned zonal supervisor to oversee field activities for data quality assurance purposes. However, all completed interviews were cross-checked by enumerators and supervisors before being uploaded to the secure Kobo Toolbox platform. A virtual control room, jointly managed by the Data Processing and Dissemination (DPD) team, state coordinators, and level-two supervisors, reviewed submissions for accuracy, completeness, and internal consistency. Any identified discrepancies were promptly flagged for clarification with the enumerators while still in the field. Minor errors were corrected and resubmitted, whereas major inconsistencies necessitated re-assessment or re-interview of the affected cases. Overall, data collection proceeded smoothly, with only minimal field challenges encountered.

3.4 Econometric model

The analytical model for this study draws inspiration from the framework proposed by Uzochukwu et al. (2016), which emphasized that rural women and households with low educational attainment are particularly vulnerable to catastrophic health expenditure (CHE), thereby highlighting persistent inequities in financial risk protection. However, the present study extends and modifies that framework in two important scenarios. First, it develops an econometric model to empirically test the underlying arguments. Second, it incorporates a broader range of socio-demographic variables and household characteristics to identify the key predictors of catastrophic health expenditure among women of reproductive age in Ekiti State.

Hence, the model is specified as:

$$CHE_i = f(SDF, HC) \dots\dots\dots(3.1)$$

Where: CHE = Catastrophic Health Expenditure is denoted as the dependent variable

SDF = Socio-demographic factors

HC = Household characteristics

Both SDF and HC are the independent variables. They includes; urbanity (residence), age group, marital status, ethnicity, religion, position in the household, household size, education, occupation, functioning TV, household monthly income, household wealth index (Quintile), treatment facility type, health facility utilization frequency, household member illness episodes, action taken to cure illness, burden of payment for illness, cost of drugs paid, and household means of transport. The dependent variable—*catastrophic health expenditure (CHE)*—was

operationalized as a binary variable, where 1 = Yes indicated that a respondent experienced CHE, and 0 = No indicating otherwise. This coding allowed for the estimation of the proportions and the probability that a woman of reproductive age would experience CHE based on her socio-economic and household characteristics.

Theoretically, the study expects that these variables may all contribute to persistent out-of-pocket spending. For instance, health facility utilization frequency and household member illness episodes, irrespective of any despite targeted subsidies for women, will continue to expose women to financial hardship and more CHE. Additionally, rural women and households with low educational attainment might be susceptible to CHE. The data collected were analyzed using cross-tabulation to explore relationships between key variables, Chi-square tests to assess the significance of associations, and logistic regression analysis to identify the drivers of catastrophic health expenditure among women of reproductive age in Ekiti State.

4. Data Analysis and Findings

Table 1: Socio-Demographic Background of the Study Participants by Residence (n=232)

Socio-Demographic Variables		Urban	%	Rural	%	Total
Age-Group	18 - 30 Years	40	22.9%	11	19.3%	51
	31 - 45 years	73	41.7%	25	43.9%	98
	45 -60 years	43	24.6%	15	26.3%	58
	Above 60 years	19	10.9%	6	10.5%	25
	Total	175	100.0%	57	100.0%	232
Ethnicity	Yoruba	165	94.3%	48	84.2%	213
	Non-Yoruba	10	5.7%	9	15.8%	19
	Total	175	100.0%	57	100.0%	232
Education	None	7	4.0%	2	3.5%	9
	Primary	22	12.6%	7	12.3%	29
	Secondary	96	54.9%	25	43.9%	121
	Tertiary	50	28.6%	23	40.4%	73
	Total	175	100.0%	57	100.0%	232
Marital status	Married	142	81.1%	47	82.5%	189
	Single	33	18.9%	10	17.5%	43
	Total	175	100.0%	57	100.0%	232
Occupation	Artisan	48	27.4%	7	12.3%	55
	Civil servant	11	6.3%	5	8.8%	16
	Other	11	6.3%	5	8.8%	16
	Religious leader	1	0.6%	0	0.0%	1
	Trader	104	59.4%	40	70.2%	144
	Total	175	100.0%	57	100.0%	232
Household income	101,000 - 200,000	48	27.4%	15	26.3%	63
	201,000 - 300,000	110	62.9%	31	54.4%	141
	30,000 - 100,000	16	9.1%	8	14.0%	24
	Above 300,000	1	0.6%	2	3.5%	3
	Less than 30,000	0	0.0%	1	1.8%	1
	Total	175	100.0%	57	100.0%	232
Religion affiliations	Christianity	163	93.1%	53	93.0%	216
	Islam	11	6.3%	4	7.0%	15
	Traditional	1	0.6%	0	0.0%	1
	Worship					

	Total	175	100.0%	57	100.0%	232
Households heads	Female headed households	26	25.0%	116	37.0%	142
Households wealth index	Medium	21	12.0%	10	17.5%	31
	Poorer	53	30.3%	11	19.3%	64
	Poorest	44	25.1%	8	14.0%	52
	Rich	26	14.9%	14	24.6%	40
	Richest	31	17.7%	14	24.6%	45
	Total	175	100.0%	57	100.0%	232

Source: Authors' Computation (2025)

Table 1 demonstrates the socio-demographic background of the study participants. For instance, the age distribution of respondents indicates that majority fall within the 31–45 years age group. This accounts for 41.7% of the urban and 43.9% of the rural population. Younger adults aged 18–30 years are slightly more represented in urban areas (22.9%) compared to rural areas (19.3%), while those above 60 years constitute the smallest proportion in both settings. In terms of ethnicity, Yoruba make up majority of respondents in both locations, representing 94.3% in urban and 84.2% in rural areas, although non-Yoruba respondents are relatively more present in rural areas (15.8%) than in urban areas (5.7%). With respect to education, secondary education is the most common among respondents, particularly in urban areas where it accounts for 54.9% compared to 43.9% in rural areas. Interestingly, tertiary education is more represented among rural respondents (40.4%) than urban respondents (28.6%), while only a small fraction of the population reported having no education at all. The occupational distribution shows that trading is the dominant economic activity, with 59.4% of urban respondents and as many as 70.2% of rural respondents engaged in it. Artisanry is, however, more prominent in urban areas (27.4%) than in rural areas (12.3%), while only a small share are civil servants, religious leaders, or engaged in other forms of employment.

In terms of household monthly income, majority of respondents earn between ₦201,000 and ₦300,000. This also account for 62.9% of urban households and 54.4% of rural households. Followed by the ₦101,000–₦200,000 range, that represents about a quarter of respondents in both locations. Only a few respondents earn less than ₦30,000 or more than ₦300,000. Religion is also highly homogenous across the sample, with Christianity dominating at 93% in both urban and rural areas, while Islam constitutes a small minority and traditional worshippers are negligible. Regarding household headship, the data suggest that a significant proportion of households are female headed, with rural areas (37%) having a higher proportion compared to urban areas (25%). This points to a strong representation of women as household heads in the study population. The wealth index distribution reveals that the poorer and poorest categories together account for over half of urban households (55.4%), while in rural areas the rich and richest categories are more pronounced (49.2%). This indicates an interesting contrast where urban households appear more concentrated in the lower wealth categories, despite reporting higher absolute incomes, while rural households show relatively greater representation among the wealthy categories.

Table 2: Proportions of Respondents Who Experienced Catastrophic Health Expenditures (CHE) in Ekiti State by Residence (n = 232)

Thresholds of CHE		Urban	%	Rural	%	Total
Catastrophic Health Expenditures (10% of total income)	No	115	65.7%	44	77.2%	159
	Yes	60	34.3%	13	22.8%	73
	Total	175	100.0%	57	100.0%	232
Catastrophic Health Expenditures (40% of non-food expenditures)	No	88	50.3%	45	78.9%	133
	Yes	87	49.7%	12	21.1%	99
	Total	175	100.0%	57	100.0%	232

Source: Authors' Computation (2025)

Table 2 depicts the proportion of respondents who reported experiencing catastrophic health expenditures (CHE) by urban and rural settlements. The results in table 2 show that the incidence of catastrophic health expenditures

(CHE) differs significantly between urban and rural households, and the pattern varies by threshold applied. Using the 10% of total income threshold, 34.3% of urban households experienced catastrophic health expenditures compared to only 22.8% of rural households. This means that about one in three women of child-bearing age residing in urban households faced a financial burden from health spending, whereas fewer than one in four women of reproductive age in rural households did. When the stricter 40% of non-food expenditure threshold is applied, the proportion of affected households increases in urban areas, with nearly half (49.7%) experiencing catastrophic health expenditures, while only 21.1% of rural households were similarly affected. Conversely, the share of households not incurring catastrophic spending remains substantially higher in rural areas (78.9%) than in urban areas (50.3%). Overall, these findings indicate that women of child-bearing age in urban households are more vulnerable to catastrophic health expenditures than women in rural households, regardless of the threshold applied. The disparity is more pronounced at the 40% non-food expenditure threshold, suggesting that the financial burden of maternal and child healthcare services is heavier among women of child-bearing age in urban areas, possibly due to higher service costs, increased utilization of formal healthcare, or lower coping mechanisms compared to rural households.

Table 3: Chi-Square Test of Association Between Socio-Demographic/Household Characteristics and Catastrophic Health Expenditure (CHE) (n =232)

Catastrophic Health Expenditure (CHE)	χ^2	df	p-values	Significance
Urbanity (Residence)	13.89	1	< .001	Significant
Age Group	4.74	3	.001	Significant
Marital Status	1.34	1	< .001	Significant
Ethnicity	1.32	1	.002	Significant
Religion	0.70	2	.003	Significant
Position in the Household	1.60	1	.009	Significant
Household Size	10.67	12	.001	Significant
Education	2.38	3	< .001	Significant
Occupation	6.31	4	.004	Significant
Functioning TV	2.04	1	.004	Significant
Household Monthly Income	19.60	4	.001	Significant
Household Wealth Index (Quintile)	6.40	4	.008	Significant
Treatment Facility Type	13.60	4	.009	Significant
Health Facility Utilization Frequency	5.08	5	.006	Significant
Household Member Illness Episodes	25.09	3	< .001	Significant
Action Taken to Cure Illness	15.37	5	.009	Significant
Burden of Payment for Illness	3.86	3	.002	Significant
Cost of Drugs Paid	6.73	4	< .001	Significant
Household Means of Transport	3.45	4	.001	Significant

Source: Authors' Compilation (2025)

All associations were tested using Pearson's Chi-square test. Significance was evaluated at $\alpha = .05$. In table 3 the Chi-square test reveals that all the examined socio-demographic and household characteristics were significantly associated with catastrophic health expenditure (CHE) in the study location. Specifically, socio-demographic factors such as residence, age group, marital status, ethnicity, education, and occupation significantly influence the likelihood of households incurring CHE. For example, urban-rural disparities and differences in education or occupation appear to affect financial risk protection.

Household characteristics (household size, wealth index, monthly income, and asset ownership such as TV) show significant associations, suggesting that both income and resource endowments are critical drivers of CHE in the study locations. Health service-related variables (treatment facility type, frequency of facility uses, action taken to cure illness, burden of payment, and cost of drugs) were strongly linked to CHE. This implies that patterns of healthcare utilization and the cost structure of services directly affect households' risk of catastrophic spending among women of child-bearing age in the study locations. Household illness dynamics, especially the number of illness episodes, had one of the strongest associations ($\chi^2 = 25.09$, $p < .001$), confirming that recurrent illnesses

drive financial hardship. The significance of household means of transport indicates that indirect costs, such as transportation to health facilities, also contribute meaningfully to CHE among women of reproductive age in Ekiti State.

Table 4: Drivers of Catastrophic Health Expenditure Among Women of Reproductive Age in Ekiti State (n = 232)

Catastrophic Health Expenditure (CHE)	B (SE)	OR	95% CI for OR	P-Values
Intercept	7.74 (4.90)	15.99	[6.47, 2952.00]	.000*
Urbanity (Residence)	6.28 (0.70)	12.32	[0.33, 5.19]	.004
Age Group	10.03 (0.33)	20.36	[0.19, 0.68]	.002
Marital Status	9.43 (0.74)	18.53	[0.36, 6.51]	.001
Ethnicity	5.15 (1.64)	10.01	[0.15, 0.57]	.002
Religion	4.83 (0.73)	8.30	[0.55, 9.67]	.001
Household Head	8.34 (0.70)	32.26	[0.07, 1.02]	.000*
Household Size	3.04 (0.13)	6.04	[0.80, 1.34]	.012
Education	9.36 (0.39)	18.43	[0.66, 3.10]	.003
Occupation	13.28 (0.16)	13.32	[0.96, 1.81]	.004
Functioning TV	2.37 (0.75)	4.69	[0.16, 3.02]	.001
Household Monthly Income	9.18 (0.37)	18.27	[1.58, 6.74]	.001
Household Wealth Index (Quintile)	4.34 (0.27)	8.41	[0.82, 2.41]	.000*
Treatment Facility Type	8.60 (0.36)	32.82	[0.90, 3.69]	.000*
Health Facility Utilization Frequency	7.20 (0.27)	14.82	[0.49, 1.38]	.003
Household Illness Episodes	12.78 (0.49)	24.93	[2.25, 15.60]	.000*
Action Taken to Cure Illness	6.03 (0.19)	12.03	[0.72, 1.48]	.001
Burden of Payment for HH Member	6.40 (0.22)	12.67	[0.44, 1.03]	.002
Cost of Drugs for Service Satisfaction	17.66 (0.29)	35.94	[1.10, 3.41]	.001
Household Means of Transport	5.27 (0.49)	10.31	[0.50, 3.43]	.000*

Source: Authors' Compilation (2025)

Note. B = regression coefficient; SE = standard error; OR = odds ratio; CI = confidence interval. * $p < .05$. The logistic regression examined determinants of catastrophic health expenditures (CHE) among women of reproductive age in Ekiti State. Several factors emerged as significant predictors at the .05 level. Socio-demographic factors such as urbanity (residence), age group, and marital status significantly predicted CHE, with odds ratios ranging between 12.3 and 20.4. Women in older age groups, married households, and those in urban areas had a higher likelihood of incurring CHE. Household headship and household size were significant, suggesting that households led by women and those with larger sizes face increased financial vulnerability. Socioeconomic status which includes education and occupation were positively associated with CHE, indicating that even educated and employed households remain financially exposed. Monthly income and wealth index (quintiles) were strong predictors; although higher income reduces poverty, out-of-pocket spending still exposes women of child-bearing age to CHE.

Health system and utilization factors such as type of treatment facility and frequency of health facility use significantly influenced CHE. Households that relied on higher-level facilities and frequent visits were more likely to face catastrophic payments. Illness episodes within households showed one of the strongest effects (OR = 24.9, $p < .001$), highlighting the cumulative burden of repeated illness. Health expenditure components such as Cost of drugs were the single most influential predictor (OR = 35.9, $p < .001$), demonstrating how pharmaceutical expenses drive CHE. Burden of payments for household members and transport costs also significantly contributed to financial strain. The results suggest that both demand-side factors (household demographics, illness frequency, socioeconomic status) and supply-side factors (treatment facility type, drug costs, indirect payments) jointly determine the likelihood of CHE. Women of reproductive age, who often bear disproportionate healthcare responsibilities, are at heightened risk. These findings align with cross-country evidence from Ghana, Kenya, and Rwanda, where drug costs, recurrent illness, and indirect service expenses remain key drivers of catastrophic health expenditures despite the presence of health insurance schemes.

5. Results and Discussion

Taken together, the bivariate (Table 3) and multivariable (Table 4) results show that CHE among women of reproductive age in Ekiti State is jointly shaped by socio-demographic vulnerability, household economic capacity, illness burden, and health-system factors. Every factor tested in the Chi-square analysis was associated with CHE, and the logistic regression pinpointed the strongest predictors—illness episodes, cost of drugs, treatment facility type, household headship/size, and income/wealth.

Socio-demographic gradients of the respondents such as urbanity, age, marital status, ethnicity and religion were all associated with CHE; the regression indicates higher odds for older age groups, urban residents, and married households. These patterns echo the gendered and lifecycle risks reported across LMICs. For instance, in Tanzania and Uganda, women—especially those of reproductive age—face higher CHE due to maternal and child health needs and limited financial autonomy (Borghi et al., 2009; Kiwanuka et al., 2018). In Kenya, socio-economic and geographic inequalities persist in financial risk protection despite national insurance reforms (Barasa et al., 2017). In Ghana, while NHIS improved overall protection, women in poorer quintiles and rural areas still shoulder disproportionate OOP costs (Aryeetey et al., 2016; Kusi et al., 2015).

In the aspect of households' economic status and headship, our findings depict that income, wealth and household size predict CHE aligning with multi-country evidence. In Ethiopia, CBHI enrolment reduces CHE, but larger households and those in lower wealth quintiles remain vulnerable to CHE (Mebratie et al., 2015; Adane et al., 2021). Across Asia (India, Bangladesh, Vietnam), households in the bottom wealth quintiles have markedly higher CHE odds due to heavy OOP financing (Karan et al., 2017; van Doorslaer et al., 2007; Wagstaff et al., 2018). The significance of household headship in our model dovetails with Nigerian and Ghanaian studies showing that female-headed or single-earner households are less able to smooth health shocks (Aregbeshola & Khan, 2018; Kusi et al., 2015).

Digging further, illness burden and utilization which include the number of illness episodes is one of the largest effects in our model ($OR \approx 24.9$), underscoring how repeated health shocks drive CHE. Similar magnitudes are documented in Kenya and Vietnam, where recurrent or chronic illness sharply escalates the probability of catastrophic payments even among insured households (Barasa et al., 2017; Wagstaff et al., 2018). Results from the survey which showed that higher-level facility uses and more frequent visits increase CHE are consistent with Rwanda's CBHI experience, where referral pathways and copayments at hospitals can sustain OOP burdens (Lu et al., 2012).

In addition, the cost of drugs is the single most influential predictor in our logit regression model ($OR \approx 35.9$). This mirrors robust evidence that medicines account for the largest OOP share in many Low- and Middle-Income Countries (LMICs). This result aligns with Ghana and Uganda, where gaps in formulary coverage and frequent stock-outs push patients to private pharmacies at higher prices (Aryeetey et al., 2016; Kiwanuka et al., 2018). In India and Bangladesh, pharmaceuticals explain much of CHE among the poor women of child-bearing age (Karan et al., 2017; van Doorslaer et al., 2007). The significant effect for transport confirms that non-medical costs materially contribute to CHE, as shown in Ethiopia and Kenya, where distance and transport fees reduce effective financial protection (Mebratie et al., 2015; Barasa et al., 2017).

6. Conclusion and Policy Recommendations

This research demonstrates that catastrophic health expenditure (CHE) in Ekiti State is not random but systematically shaped by socio-demographic conditions, household economic capacity, illness burden, and health-system gaps. Although ULERAWA has increased service access for women of reproductive age, the persistence of high out-of-pocket costs—especially for medicines, transport, and repeated illness episodes—undermines its ability to provide effective financial protection.

Cross-country evidences suggest that coverage expansion alone is insufficient; schemes that explicitly subsidize essential medicines, tighten provider payment and referral protocols, and mitigate indirect costs (transport

vouchers, maternity waivers) achieve larger CHE reductions. Rwanda's community-based insurance and Ghana's NHIS show that pro-poor subsidies and strong purchasing can cut CHE among women of reproductive age, but persistent OOP remains where drug benefits and informal payments are not well controlled (Lu et al., 2012; Aryeetey et al., 2016). Financial decision-making is likely to yield measurable CHE reductions, as suggested by equity-focused reforms in Kenya and Ghana (Barasa et al., 2017; Aryeetey et al., 2016). The empirical evidence from Nigeria and other LMICs highlights a common pattern: health insurance schemes often expand coverage without adequately reducing CHE among women of child-bearing age. Unless the governments directly address the cost of essential drugs, regulate provider practices, and mitigate indirect costs, CHE will continue to persist among vulnerable households. Lessons from Ghana, Rwanda, Kenya, Ethiopia, and South Asia confirm that sustainable financing, equity-focused subsidies, and gender-responsive design are critical for shielding households from financial catastrophe. However, for Ekiti State, three policy priorities are evident:

- i. Expand and enforce coverage of essential medicines under ULERAWA health insurance scheme.
- ii. Introduce subsidies or waivers for transport and referral services, especially for maternal and child health.
- iii. Target high-risk households—particularly large, low-income, and female-headed households—for additional protection. By embedding these reforms, ULERAWA health insurance scheme can move closer to achieving its equity goals while contributing to Nigeria's broader universal health coverage agenda.

Author Contributions: All authors contributed to this research.

Funding: Not applicable.

Conflict of Interest: The authors declare no conflict of interest.

Informed Consent Statement/Ethics Approval: Not applicable.

Declaration of Generative AI and AI-assisted Technologies: This study has not used any generative AI tools or technologies in the preparation of this manuscript.

References

- Adane, T., et al. (2021). Catastrophic health expenditure and associated factors in Ethiopia. *BMC Health Services Research*, 21, 128. <https://doi.org/10.1186/s12913-021-06141-0>
- Ajayi, P.O., Ibirongbe, D.O., Ipinnimo, T.M., Solomon, O.O., Ibikunle, A.I., Obiagwu, A.E. (2021). The Prevalence of Household Catastrophic Health Expenditure in Nigeria: A Rural-Urban Comparison. *Journal of Health and Medical Sciences*, 4 (2) (2021).
- Adeyanju, O., Tubeuf, S., & Ensor, T. (2021). Universal health coverage in Nigeria: The role of financial risk protection. *Health Policy and Planning*, 36(7), 1020–1030. <https://doi.org/10.1093/heapol/czab024>.
- Ajayi, P.O., Ipinnimo, T.M., Esan, D.T., Solomon, O.O., Olanrewaju, T.M. (2022). Determinants of catastrophic health spending among rural households in Nigeria. *The Nigerian Health Journal*, 22(3), 10-20. <https://www.tnhjph.com/index.php/tnhj/article/view/587>.
- Aregbeshola, B. S., & Khan, S. M. (2018). Out-of-pocket payments, catastrophic health expenditure and poverty among households in Nigeria 2010. *International Journal of Health Policy and Management*, 7(9), 798–806. <https://doi.org/10.15171/ijhpm.2018.19>
- Aryeetey, G. C., et al. (2016). Can the National Health Insurance Scheme protect the poor? Evidence from Ghana. *Health Economics Review*, 6, 1–12. <https://doi.org/10.1186/s13561-016-0080-9>
- Andersen, R. M. (1995). Revisiting the behavioral model and access to medical care: Does it matter? *Journal of Health and Social Behavior*, 36(1), 1–10.
- Andersen, R. M., & Davidson, P. L. (2007). Improving access to care in America: Individual and contextual indicators. In R. M. Andersen, T. H. Rice, & G. F. Kominski (Eds.), *Changing the U.S. health care system: Key issues in health services policy and management* (3rd ed., pp. 3–31). San Francisco: Jossey-Bass.
- Babitsch, B., Gohl, D., & von Lengerke, T. (2012). Re-revisiting Andersen's Behavioral Model of Health Services Use: A systematic review of studies from 1998–2011. *GMS Psycho-Social-Medicine*, 9(Doc11), 1–15.

- Barasa, E., et al. (2017). Examining catastrophic health expenditures in Kenya. *BMJ Global Health*, 2(1), e000199. <https://doi.org/10.1136/bmjgh-2016-000199>
- Borghi, J., et al. (2009). Catastrophic payments for maternal care in Tanzania. *Health Policy and Planning*, 24(6), 455–467. <https://doi.org/10.1093/heapol/czp032>
- Connell, R. W. (2012). *Gender, health and theory: Conceptualizing the issue, in local and world perspective. Social Science & Medicine*, 74(11), 1675–1683.
- Doyal, L. (2000). Gender equity in health: Debates and dilemmas. *Social Science & Medicine*, 51(6), 931–939.
- Ekiti State Ministry of Health. (2022). *Ekiti State Health Insurance Scheme annual report*. Ekiti State Government.
- Ipinnimo, T.M., & K.A., Durowade (2022). Catastrophic Health Expenditure and Impoverishment from Non-Communicable Diseases: A comparison of Private and Public Health Facilities in Ekiti State, Southwest Nigeria. *Ethiop J Health Sci*. 32(5):993–1006 <https://pmc.ncbi.nlm.nih.gov/articles/PMC9554780/>
- Inyang, U., Chukwudum, Q.C. & Edet, I.E. (2025). financial protection effect of national social health insurance programme in nigeria: a test of difference of out-of-pocket expenditure on health care of enrollees versus non-enrollees. *African Banking and Financial Review Journal*, 20(5), 75-88. <https://www.abfrjournal.com/index.php/abfr/article/view/330>.
- Kankeu, H. T., Saksena, P., Xu, K., & Evans, D. B. (2013). The financial burden from non-communicable diseases in low- and middle-income countries: A literature review. *Health Research Policy and Systems*, 11(1), 31. <https://doi.org/10.1186/1478-4505-11-31>
- Karan, A., et al. (2017). Extending health coverage in India: Who pays? *Health Policy and Planning*, 32(7), 975–984. <https://doi.org/10.1093/heapol/czx048>.
- Kiwanuka, S. N., et al. (2018). Financial risk protection and out-of-pocket expenditure in Uganda. *BMC Health Services Research*, 18, 1–11. <https://doi.org/10.1186/s12913-018-3072-1>
- Kusi, A., et al. (2015). Catastrophic health expenditures and National Health Insurance in Ghana. *Health Economics Review*, 5, 1–12. <https://doi.org/10.1186/s13561-015-0051-8>.
- Lu, C., et al. (2012). Community-based health insurance in Rwanda and financial protection. *Health Policy*, 99(3), 203–209. <https://doi.org/10.1016/j.healthpol.2010.09.009>.
- Mohammed, O.A., Njiforti, P.P., & Rafindadi, S.A. (2022). Economic analysis of the impact of reproductive health policy on reproductive health outcome in Nigeria: Evidence from Wisconsin Logic Model. *Asian Journal of Management Sciences and Economics*, 9(1), 1-26. <http://multidisciplinaryjournals.com/ajmse-vol-9-no-1-2022/>
- Mohammed, O.A., Njiforti, P.P., & Rafindadi, S.A. (2021). Analysis of the impact of reproductive health outcomes on women's labor force participation and earnings in Nigeria in Nigeria. *Asian Journal of Management Sciences and Economics*, 8(1), 20-46. *AJMSE Vol. 8 No. 1, 2021 | Multidisciplinary Journals*
- Mohammed, O.A., Popoola, T.O., Bognet, A.C., & Dahunsi, O.E. (2023). Determinants of Healthcare Seeking Behaviour Amongst Households in Nigeria. *Abuja Journal of Economics and Allied Fields*, 12(5), 129-143. Print ISSN: 2672-4375 Online: 2672-4324.
- Nwangwu, C., Mohammed, O.A., Oshaji, P., Ajiboye, O.S., Anibilowo, M.A., Ugboodu, J.I., & Kazeem, O.H. (2024). Modeling The Effect of Maternal and Child Healthcare Service Quality on Neonatal Mortality in Nigeria. *ISRG-Journal of Multidisciplinary Studies*, 2(1). <https://isrgpublishers.com/isrgjms-volume-ii-issue-i-january-2024/>. DOI: 10.5281/zenodo.10518254.
- Nwangwu, C., Mohammed, O. A., Popoola, T. O., Oshaji, P., Anibilowo, M. A., & Ajiboye, O. (2025). Households' socio-demographic factors and health insurance uptake among women of reproductive age in Nigeria. *Global Research Journal of Public Health and Epidemiology*, 13(6), 30–38.
- Nwangwu, C., Mohammed, O. A., Popoola, T. O., Oshaji, P., Anibilowo, M. A., and Ajiboye, O. " Exclusive Breastfeeding Practice in Nigeria: do Women's Socio-Economic Factors Matter?." *Global Research Journal of Public Health and Epidemiology*, vol. 13, no. 6, June 2025, pp. 20–29.
- Popoola, T.O., & Mohammed, O.A. (2023). Measles Outbreaks and Under-Five Mortality in Nigeria: Issues and Policy Options. *Journal of Economics and Allied Research*, 8(3), 35-45. ISSN: 2536-7447.
- Popoola, T.O., & Mohammed, O.A. (2024). Macroeconomic and Socio-Demographic Determinants of Longevity in Nigeria. *Lapai Journal of Economics* 8(1):23-33.
- Mebratie, A., et al. (2015). Community-based health insurance and financial protection in Ethiopia. *Health Economics*, 24(10), 1354–1368. <https://doi.org/10.1002/hec.3087>
- Multiple Indicator Cluster Survey (MICS). (2021). *National Bureau of Statistics, Nigeria*.
- National Bureau of Statistics (NBS). (2022). Nigeria multidimensional poverty index survey. https://www.nigerianstat.gov.ng/elibrary/read/1241254?utm_source=chatgpt.com
- National Bureau of Statistics (NBS). (2020). *National health accounts*.
- Morgan, R., George, A., Ssali, S., Hawkins, K., Molyneux, S., & Theobald, S. (2016). How to do (or not to do)... gender analysis in health systems research. *Health Policy and Planning*, 31(8), 1069–1078.

- Onoka, C. A., Onwujekwe, O. E., Hanson, K., & Uzochukwu, B. S. (2015). Examining catastrophic health expenditures at variable thresholds using household consumption expenditure diaries. *Tropical Medicine & International Health*, 16(10), 1334–1341. <https://doi.org/10.1111/j.1365-3156.2011.02836.x>
- Ogundare, E.O., Taiwo, A.B., Olatunya, O.S., Afolabi, M.O. (2022). Incidence of Catastrophic Health Expenditures Amongst Hospitalized Neonates in Ekiti, Southwest Nigeria. *Clinicoecon Outcomes Res*, 4(5), 383–394. <https://pmc.ncbi.nlm.nih.gov/articles/PMC9123901/>
- Sen, G., Östlin, P., & George, A. (2007). *Unequal, unfair, ineffective and inefficient: Gender inequity in health*. Report to the WHO Commission on Social Determinants of Health.
- Ulerawa – Ekiti flagship health insurance programme. (n.d.). *Microbiotics*. <https://microbiotics.com.ng/ulerawa-ekiti-flagship-health-insurance-programme>
- Ulerawa: Ekiti's bold approach to cutting out-of-pocket health costs for residents. (n.d.). *Nigeria Health Watch*. <https://articles.nigeriahealthwatch.com/ulerawa-ekitis-bold-approach-to-cutting-out-of-pocket-health-costs-for-residents>
- Uzochukwu, B. S. C., Onwujekwe, O. E., Eze, S., Ezumah, N., & Obikeze, E. (2016). Health care financing in Nigeria: Implications for achieving universal health coverage. *Nigerian Journal of Clinical Practice*, 18(4), 437–444. <https://doi.org/10.4103/1119-3077.154196>
- van Doorslaer, E., O'Donnell, O., Rannan-Eliya, R. P., et al. (2007). Catastrophic payments for health care in Asia. *Health Economics*, 16(11), 1159–1184. <https://doi.org/10.1002/hec.1209>
- Wagstaff, A., Flores, G., Hsu, J., et al. (2018). Progress on catastrophic health spending in 133 countries: A retrospective observational study. *The Lancet Global Health*, 6(2), e169–e179. [https://doi.org/10.1016/S2214-109X\(17\)30429-1](https://doi.org/10.1016/S2214-109X(17)30429-1)
- World Health Organization (WHO). (2021). *Global monitoring report on financial protection in health*. WHO.
- World Health Organization (WHO). (2022). Reducing out-of-pocket health expenditure a panacea to universal health coverage. <https://www.afro.who.int/news/reducing-out-pocket-health-expenditure-panacea-universal-health-coverage>
- Xu, K., Evans, D. B., Kawabata, K., et al. (2003). Household catastrophic health expenditure: A multicountry analysis. *The Lancet*, 362(9378), 111–117. [https://doi.org/10.1016/S0140-6736\(03\)13861-5](https://doi.org/10.1016/S0140-6736(03)13861-5)