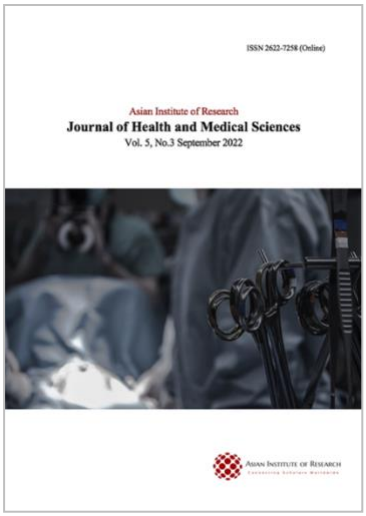


# Journal of Health and Medical Sciences

**Adegboye, O. D., Fasiku, M. M., Ibirongbe, D. O., & Akande, T. M. (2022), Health Shocks and Coping Mechanisms in North Central Nigeria: The Gender Perspective. *Journal of Health and Medical Sciences*, 5(3), 15-27.**

ISSN 2622-7258

DOI: 10.31014/aior.1994.05.03.225

The online version of this article can be found at:
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The Asian Institute of Research
Journal of Health and Medical Sciences
Vol.5, No.3, 2022: 15-27
ISSN 2622-7258

DOI: 10.31014/aior.1994.05.03.225

# Health Shocks and Coping Mechanisms in North Central Nigeria: The Gender Perspective

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**Abstract**
Introduction: Reliance on out-of-pockets (OOP) payments for health services has continued to hamper access to quality healthcare across Nigeria. Socio-demographic and socio-economic characteristics of the gender of the household head as it influences and impacts health shocks and OOP payments have received very little attention globally. This study investigated the gender perspective on health shocks, health expenditures and coping mechanisms in North Central, Nigeria. Methods: This is a cross-sectional analytical study involving both quantitative and qualitative data collection methods. A total of 1,192 households were studied using multi-stage sampling technique in both rural and urban communities in North Central, Nigeria. Data was analysed with SPSS version 20, and qualitative analysis was done by thematic analysis. Results: The finding showed that 458 (38.4%) of the respondents were female-headed households (FHHs). Female-headed households were less educated, earned lower income, resided more in rural communities and were less insured than male-headed households (MHHs). Health shocks were higher among the FHHs and they also pay higher percentage of their household expenditure for healthcare through higher OOP payments. Also, more FHHs experienced Catastrophic Health Expenditure (CHE) and reported effects of health shocks on reduction in food consumption and loss of income than MHHs. Age, income, occupation and household size are all factors that influenced health shocks in this study. Conclusions: Innovative ways to financially protect women must be employed, to close up the equity gap and bring Nigeria closer to achieving UHC.

**Keywords:** Female, Health Shocks, Out-of-Pocket Payments, Healthcare, Coping Mechanism

## 1. Introduction

Generally, the Universal Health Coverage (UHC) aims at reducing the financial hardship households suffer anytime they try to use or use healthcare services. This has become a major concern globally, and thus it has

been made the target of the health sustainable development goal 3 (SDG3) (Alawode & Adewole, 2021). However, people all around the world still experience diseases and illnesses which can adversely affect their social well-being and economy. These undesirable health experiences are often referred to as "health shocks." "Health shocks" by World Health Organization (WHO) are defined as unpredictable illnesses that diminish health status (Lieve & Xu, 2008). Health shocks are also often used to refer to negative health events, which are unexpected and they impact on many other economic decisions of households especially in low-income and middle-income countries (LMICs) (Li *et al.*, 2012; Asad & Jaai, 2017; Rice *et al.*, 2018). Health shocks could be in form of death, injury or illness (Khurshid & Ajay, 2014; Dhanaraj, 2016; Mitra *et al.*, 2016).

Despite all efforts by the World Health Organization on UHC and push to achieve SDG 3, the LMICs, Nigeria inclusive, have suffered major set-backs in achieving this goal. This is because health care financing in Nigeria has been deeply characterized by declining budgetary provisions since early 80's. The health budget in Nigeria has persistently been less than 8% of the total country's budget as against the declaration made in Abuja in the year 2000 that countries should spend at least 15% of their total budget on health (Adegboye *et al.*, 2018). This gross irregularity in healthcare financing for ill health and health shocks has caused the health care system to be dominated by out-of-pockets (OOP) payments in Nigeria (Omotosho & Ichoku, 2016). World Bank states that OOP spending for healthcare in Nigeria constitutes 72% of total health expenditure and 95% of the total private health expenditure in 2015 (Adisa, 2015), this is unacceptably high despite 15 years of existence of health insurance scheme that is supposed to serve as the prepayment mechanism for all citizens (Omotosho & Ichoku, 2016; Odeyemi & Nixon, 2013).

When households are struck with health shocks, they adopt other informal payment coping mechanisms to smoothen out its social and economic effects. Payment coping mechanisms refer to ways in which households respond to health shocks and the payment mechanisms used for health services received, such as use of own money, borrowed money, sale of assets, payment by subsidy/deferment/exemptions or by community support (Odeyemi & Nixon, 2013; Onisanwa & Olaniyan, 2018). These coping mechanisms during health shocks sometimes have a negative vicious cycle effects on households, especially the poor and vulnerable (Ewelukwa *et al.*, 2013; Bonfer & Gustafsson 2017). Studies have shown that the major problem of health shocks and the negative effects it has on households in developing countries especially Nigeria is the financial burden OOP poses and the threat it exerts by pushing UHC further out of reach, with women and girls being at the receiving end than the male gender (Babatunde *et al.*, 2016; Onisanwa & Olaniyan, 2018; Urama *et al.*, 2019). The women population represents about 70% of the world's poor (Urama *et al.*, 2019), and comprises women who are female-headed households (FHHs).

The situation of poor health financing in Nigeria and the inequity in the health system is one of the major causes of the poor health indicators (Aregbeshola & Khan, 2018). These indices have been shown to be worse among women dwelling in the rural communities and among women with poor education. This is significant because the number of women who are becoming household heads is growing globally (Urama *et al.*, 2019).

The rationale of this study is to bring insight to health shocks, the pattern of health care expenditure, to identify the economic consequences of health shocks on households especially FHHs and to give recommendations on how the government can implement policies that will improve the state of health care of the country. In order to explore the gender perspective of health shocks, this paper has four objectives such as to compare the distribution of health shocks among the male and female-headed households; to compare their health expenditure pattern; coping mechanisms of household heads; as well as assessing the effects of out-of-pocket expenses on households headed by male or female. This research answered some questions. Is there any difference between the distribution of health shocks among male or female headed households in North Central Nigeria? Is there any difference in MHHs and FHHs health expenditure and what are the effects of OOP payments by the male and female headed households?

## 2. Methods and Materials

North Central Nigeria is one of the six geo-political zones in Nigeria. This study was carried out in Kwara and Nasarawa states which are two states that belong to the North Central political zone. Agriculture is the main stay of the economy in both states.

The study is a descriptive cross – sectional analytical study with application of quantitative and qualitative methods in Rural and Urban communities in North Central Nigeria. The study compared health shocks, household health expenditures, and coping mechanisms among the Male and Female headed households of North central Nigeria. The quantitative study was carried out through the use of the semi-structured questionnaire which was used to determine health shocks, household health expenditures and coping mechanism among Household heads in North Central Nigeria. The minimum sample size for each State for the study was 553 calculated using the formula for comparison of two proportions. However, 600 households were sampled in Kwara State and 592 households were sampled in Nasarawa State to improve the validity and reliability of the study.

Multistage sampling technique was used for the selection of respondents for the study. Two states (Kwara and Nasarawa States) were selected from states in North central Nigeria by simple random sampling technique by balloting. One Local Government was selected from each of the senatorial district in the two States by simple random sampling technique by balloting making a total of six LGAs that was selected. Two urban and two rural communities from each Local Government Area were also selected by simple random sampling. Proportionate allocation was used to allocate the questionnaires to each of the selected communities based on the population.
The household questionnaire was administered to the household heads. Household out-of-pocket payments for inpatient, outpatient and routine expenses in local currency units were collected for 12-months recall period.

## 3. Study variables and data analysis

This research collected data to quantify and qualify the experiences of male headed and female- headed households. The questionnaire was adapted from Socio- economic questionnaire used for Impact Evaluation of Kwara State Community Health Insurance survey conducted by Amsterdam Institute for Global Health and Development (AIGHD) (SEQ, 2013). “The inequitable impact of health shocks on the uninsured in Namibia questionnaire” (Doss, 2018) and “Health shocks, coping strategies and forgone healthcare among agricultural households in Kenya” (Bonfer, 2017). It investigated households socio-economic and socio-demographic characteristics, health shocks, general household expenditure, healthcare expenditure (direct and indirect) and patterns, effects of health shocks, catastrophic health expenditure and coping mechanisms adopted by households during health shocks.

The collected quantitative data were collated and edited manually to detect omission before it was entered into the computer using the Statistical Package for Social Sciences (SPSS) 20. Associations between quantitative variables were also assessed using chi-square test. Bivariate and multivariate and regression analysis were conducted. Statistical significance level was set at p-value of $< 0.05$ at a confidence level of 95%.

Qualitative analysis was done by thematic analysis of the qualitative data using four domains of the conceptual framework with verbatim transcription. The transcripts were processed, coded and interpreted manually using the detailed content analysis method. The dependent variables in this study were health shocks, effects of health shocks, catastrophic health expenditure due to health shocks and the coping mechanisms used during health shocks. Coping mechanisms were grouped into six groups as: deplete assets, use savings, use insurance, borrowing, seek help and other. Catastrophic health expenditure is defined as a certain percentage of healthcare costs that endangers the household’s ability to maintain its customary standard of living. Out of pocket payments: refers to the direct payments made by households to healthcare providers at the point of receiving healthcare services and it includes cash payments reported in the survey.

The independent variables in this study included socio-demographic indicators of household heads such as education level of household head which was re-categorized into no education, primary education, secondary

education, and tertiary education; employment status of household head categorized as employed and unemployed; age of household head; and sex of household head. Other independent variables include household size; area of residence (urban/rural); health insurance which is categorized as insured/uninsured; type of healthcare facility visited (recoded as public, private, alternative and other); and the household's socio-economic status (re-categorized into quartile groups based on the list of household assets owned). The survey collected a wide range of information on health status, health service utilization, health expenditures and household socioeconomic indicators.

The socio-demography was measured with age, gender, education, employment, religion, salary scale, insurance status, household size, geography location, employment status and type of employment of the household head. The Socio-Economic Status was calculated using Water/sanitation, Assets, Maternal education, and Income (WAMI) index, it was adapted from a UNICEF study (Psaki *et al.*, 2014) and the study population was classified into four quartiles (Q1, Q2, Q3 and Q4). Households were asked if they experienced any type of health shocks in the last one year respectively. Shock outcome was measured in binary, if shock occurred it is 1and if shock did not occur it is 0.

In order to get the estimate of household expenditure, weekly food consumption, monthly non-food consumption (excluding medical/health expenditure) and yearly non-food consumption/expenditure (excluding medical/health expenditure), households were asked about their healthcare spending in the last 12 months which was further divided into direct medical costs and direct non-medical costs. Self-reported effect: the self-reported effect of health shocks was asked, if household had any effect outlined, it was scored 1 and if not 0. The effect was measured on food consumption, education, housing, income and assets. Coping strategies were evaluated in binary by asking each household head to indicate for each coping mechanism whether they used it 1 or not 0 in case of health shocks.

Focused group discussion sessions were used to obtain qualitative data from households in the North Central urban and rural communities that were not used for the quantitative data collection to prevent selection and information bias. Participants were household heads that were purposively selected based on age (18-70 years), gender, residence in the area for the last one year. The gender was used as a criterion to represent each homogeneous group which makes two homogeneous groups of male and female household heads. A total of 12 sessions were conducted. Each group consisted of about 6 – 10 persons and each session lasted about 45 to 60 minutes. The FGD was recorded on tape recorders.

Ethical approval for the study was obtained from the research and ethical committee, University of Ilorin, Kwara State, Nigeria. Written informed consent was obtained from respondents after thorough explanation of the study to them through signing for those who can write and thumb print for those who are illiterate. All information was treated with utmost confidentiality. Participation in the study was absolutely voluntary.

## 4. Results

### *4.1. Descriptive statistics*

This gender perspective comparative study on household health shocks, health expenditure and coping mechanisms covered a total of 1192 households. In Kwara State 600 (50.3%) households were interviewed while 592 (49.7%) were from Nasarawa State. In all, six Local Government Areas (LGAs) were used for this study; one LGA was picked from each senatorial district in the two states (Kwara and Nasarawa). In this study, Male-headed households (MHHs) constituted 734 (61.6%) while the Female-headed households (FHHs) constituted 458 (38.4%) of the respondents.

The differences in age, marital status, household size and area of residence for both MHHs and FHHs are statistically significant with p-value < 0.001. The MHHs were better educated than the FHHs, even though this was not statistically significant. More MHHs engage in farming while more FHHs hawks or trade, this was statistically significant with p-value < 0.001. There is statistically significant difference among the MHHs and the FHHs in terms of monthly income, social class and insurance status with p-value <0.05. More FHHs have

lower monthly incomes than the MHHs. Also, more MHHs are insured than FHHs. More households headed by females (76.2%) experienced more health shocks than households headed by males (72.6%), even though it is not statistically significant with p-value 0.170.

The factors that influence health shocks among MHHs and FHHs are age, marital status, type of employment, income, social class, household size, area of residence and where treatment was assessed during health shocks, they were statistically significant. Education, employment and insurance status were not factors that significantly influenced health shocks among MHHs and FHHs.

More FHHs are of lower age than the MHHs. There are more FHHs that are single, widowed, divorced and separated than the MHHs. The FHHs earn lower, they are less insured and they reside more in the rural communities than the MHHs.

During the FGD sessions when asked about where treatment was sought a FHH in Rural Kwara State said:

*"I visit a woman up there who sells drugs for us and gives us injections" - FRE1*

Additionally, a rural dweller from Nasarawa state stated that;

*"We visit a private hospital nearby when ill because the primary health care that you see over there has been built for the past four years with no single equipment nor staff". – MRA2*

Households who had more inpatient cases were households which were headed by the females. The difference in the prevalence of health shocks among MHHs and FHHs was statistically significant with p-value < 0.05. Also, more FHHs experienced more malaria, upper respiratory and musculoskeletal pain episodes than the MHHs. During the FGD sessions, the common types of illnesses experienced by the rural dwellers were malaria, typhoid and upper respiratory tract infections were more mentioned. However, in the urban communities, the prevalence of health shocks is high and most respondents reported malaria, diarrhoea, upper respiratory tract infections, severe body pain and surgeries.

Most expressions gotten from the FGD sessions were that illness and injuries were part of life. A middle-aged woman in rural community in Kwara stated that;

*"It is not possible to be free from sickness." – FRB1*

For the health care expenditure, the MHHs spent higher than the FHHs in the past one year of the study though the difference was not statistically significant at p value 0.537. The pattern of health expenditure by household heads showed that poorer households paid larger percentage of their income on health than the richer households. The FHHs even paid higher percentage of their income on health than the MHHs.

The health expenditure as a result of OOP payments because of health shocks had some negative effects on food, education and housing. Female-headed households feeding, education and income were more affected than the MHHs. During FGD sessions, a female respondent from rural Kwara reiterated that:

*"Caring for sickness affects household spending especially food; it affects feeding a lot. We usually forfeit feeding for health care cost expenditures". – FRB2*

Similarly, another middle age woman from rural Kwara said:

*"Sometimes we even remove the money from the children's school fees so it affects children education. It also affects feeding because when we pay for health care food is reduced". - FRE2*

During FGD, both MHHs and FHHs said they have had reasons to sell their products off cheaply so as to get money for health care and incurred income loss because they had to stay off work to stay with their relatives on hospital admission. A MHHs in rural Nasarawa stated during the FGD session that:

*"I spent all I had to have a surgical operation done after which I had to still sell my land to cope with the drugs, follow up and pay the money I borrowed for health care, I am not yet fine but I am managing myself."* - MRG2

Another middle age man in urban Nasarawa said:

*"I sold my land to care for a household member that had cancer." – MUB2*

In order to cope with OOP, both MHHs and FHHs spent their savings to pay for health care than other coping mechanisms because most of the households are not insured. The MHHs are more insured than households headed by the females and this difference was statistically significant with p value < 0.05. During FGD sessions, a woman from a rural community in Nasarawa stated,

*"My husband was ill and was treated in the general hospital. I spent ₦20,000. I got money from family members. I sold crops and borrowed money from friends". -FRA3*

A respondent said in rural Nasarawa,

*"I have heard of health insurance before but I thought it was only for people who work with the government." – MRA3*

The factors that worsened the effect of health shocks on male household heads were old age, lower years of education, low income, lower social class and higher household size and unemployment status. For FHHs, old age, lower income, lower social class and higher households' size, the worse the effects of health shocks experience.

**5. Discussion**

The FHHs constitute slightly more than a third of household heads, this is in line with other findings in Nigeria that show that FHHs ranges from 36% to 42% (Urama, 2019). This study showed that health shocks were more prevalent among the FHHs, this is probably because women lag behind in socio-economic developments in terms of education, income and lack of control of cultural norms like widows being dispossessed of their husband's property. This may further make them lack the purchasing power for healthcare (Holmes *et al.*, 2012; Urama *et al.*, 2019). The policy implication for this is to ensure socio-economic capacity of women becomes a priority.

Malaria was found to be the predominant illness that caused health shocks in North Central Nigeria and the highest reason for outpatient visits among FHHs, even though there is no statistically significant difference among the MHHs and FHHs. Studies have shown, however, that the number of malaria cases in Nigeria is highest in the world. Nigeria suffers the world's greatest malaria burden and it continues to be a major public health problem (Dawaki *et al.*, 2016; Oyewale *et al.*, 2018). This implies that concerted efforts must be put in place by all to reduce the morbidity and mortality caused by malaria especially among the vulnerable in which women, children and rural dwellers are mostly part of.

Consistent with the present findings, other studies found OOP spending as the main source of healthcare financing in Nigeria when households seek for healthcare during health shocks (Obansa & Orimisan, 2013). This study found that the pattern of healthcare expenditure as a result of OOP spending by households in the North Central Nigeria showed that the poorer households paid higher percentage of their income and total household expenditure on healthcare compared with richer households. This invariably means that the poorer households bear the greater burden of healthcare spending and this is even worse for households that are headed by females (Olaniyan, Chukwuedo & Obafemi, 2013; Iloka *et al.*, 2018; Azzani, Roslani & Su, 2019; Urama *et al.*, 2019). In this study, the FHHs bore greater burden of health care expenditures than MHHs, which could be related to the higher demands for healthcare especially their reproductive and sexual health needs. This was similar to what was found in a study in South-Eastern Nigeria, where FHHs incurred higher financial costs burden from seeking healthcare and also incurred more OOP payments than MHHs (Urama *et al.*, 2019). This implies that the government should broaden the free or subsidised healthcare needs for women so that they do not suffer because of her reproductive and sexual needs.

In this study based on self-reported effects of health shocks, reduction in food consumption was more reported followed by effects on income. In both the FHHs were more affected than the MHHs. This is not in line with

another study in Nigeria that found that health shocks were negatively associated with income (Onisanwa & Olaniyan, 2018).

This study showed that households used coping strategies to smooth consumption when faced with health shocks. A higher percentage of both MHHs and FHHs used more of savings to cope with health shocks. The FHHs however utilize more savings for healthcare than the MHHs. This is consistent with what was found in a study in South-eastern Nigeria (Urama *et al.,* 2019) but not in line with some other studies who found that households were more likely to borrow when faced with health shocks (Sparrow *et al.,* 2014; Onisanwa & Olaniyan, 2018). Some studies found that the choice of coping mechanism by households is based on total years of education, household size and type of shock (Onisanwa & Olaniyan, 2018). This implies that enrolment into the social health insurance schemes will reduce the use of OOP and other informal coping mechanisms during health shocks.

## 6. Conclusion

This study has shown that inequity exists between the MHHs and FHHs based on both their social determinants for health, that is, their socio-demographic and socio-economic characteristics. Even though it established in this study that during health shocks, most healthcare payments were made from out-of-pockets by both genders to cope with health expenditures, yet the FHHs still bears most of the consequences of the financial burden.

Therefore, strategies to enhance equity in financial protection among the poor and the rich, the rural and urban dwellers, the Male-headed households and Female-headed households must be the utmost priority for the government and policy makers. This will invariably reduce the unbearable burden of informal coping mechanisms on households during health shocks.

The government and policy makers at all levels should strengthen the financial protection mechanism by finding innovative and alternative ways of expanding health insurance coverage especially for women because of their peculiar health needs, the rural dwellers and the informal sector in general. Governments at all levels should increase efficiency in health care so as to curb wastage of scarce resources and look into public-private partnership for health.

The Federal government should increase the budgetary allocation to health care as it was stated in the Abuja 2000 declaration. It is of utmost importance that the State and Local governments promote the health insurance scheme for all.

## 7. Limitations

There was recall bias on the amount spent for health shocks; however this did not undermine the findings in this research. Further studies should examine other dimensions of health shocks that affect household heads such as disability of household member.

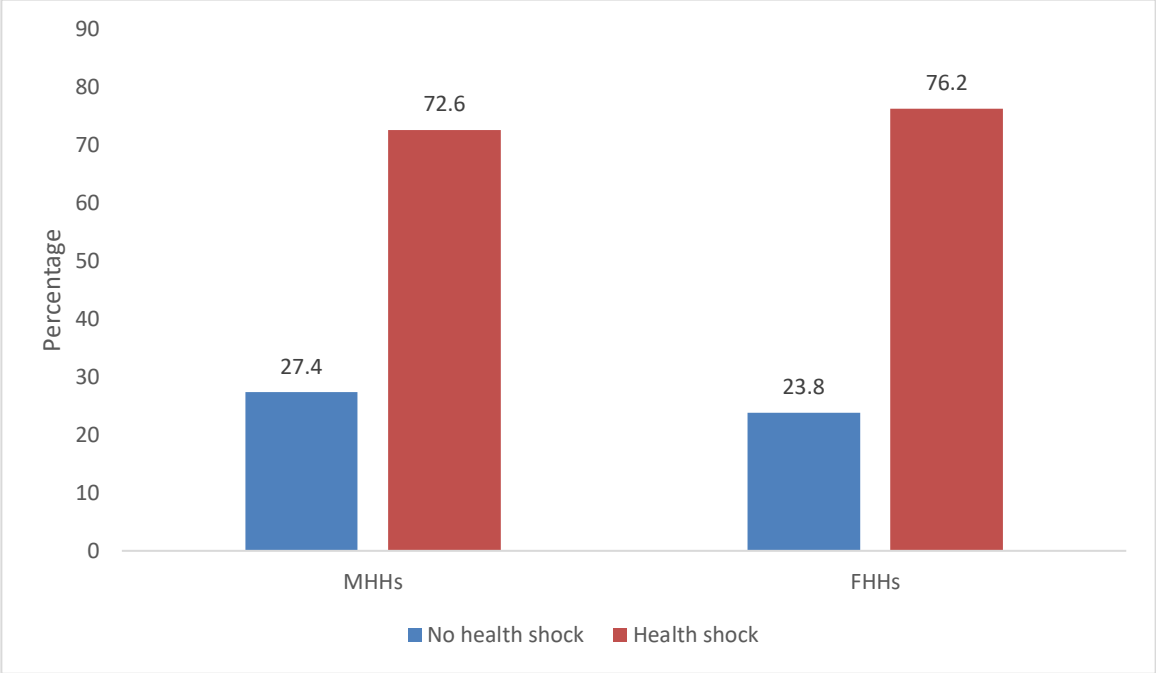
## Competing interest

The authors declare that they have no competing interests.

Table 1: Socio-demographic and socio-economic characteristics of all household heads based on gender

| Variables | Gender | | | | |
|---|---|---|---|---|---|
| | **Male n=734 (%)** | **Female n=458 (%)** | **Total n=1192 (%)** | **$\chi^2$/t** | **P** |
| **Age groups** | | | | 22.462 | **< 0.001** |
| < 30 | 104 (14.2) | 110 (24.0) | 214 (18.0) | | |
| 30 – 39 | 260 (35.4) | 147 (32.1) | 407 (34.1) | | |
| 40 – 49 | 180 (24.5) | 103 (22.5) | 283 (23.7) | | |
| 50 – 59 | 102 (13.9) | 58 (12.7) | 160 (13.4) | | |
| 60 – 69 | 45 (13.9) | 27 (5.9) | 72 (6.0) | | |
| ≥ 70 | 43 (5.9) | 13 (2.8) | 56 (4.7) | | |
| **Mean ± SD** | 42.04 ± 13.32 | 38.84 ± 12.45 | 40.86±13.24 | 4.125 | 0.453 |
| **Marital status** | | | | 84.494 | **< 0.001** |
| Single | 23 (3.1) | 19 (4.1) | 42 (3.5) | | |
| Married | 697 (95.0) | 367 (80.1) | 1064 (89.3) | | |
| Widowed | 8 (1.1) | 57 (12.4) | 65 (5.5) | | |
| Divorced | 2 (0.3) | 3 (0.7) | 5 (0.4) | | |
| Separated | 4 (0.5) | 12 (2.6) | 16 (1.3) | | |
| **Education of HH head** | | | | 1.359 | 0.929 |
| No formal education | 128 (17.4) | 86 (18.8) | 214 (18.0) | | |
| Primary | 112 (15.3) | 77 (16.8) | 189 (15.9) | | |
| Junior Secondary | 43 (5.9) | 28 (6.1) | 71 (6.0) | | |
| Senior Secondary | 207 (28.2) | 126 (27.5) | 333 (27.9) | | |
| Tertiary | 238 (32.4) | 138 (30.1) | 376 (31.5) | | |
| Others | 6 (0.8) | 3 (0.7) | 9 (0.8) | | |
| **Mean ± SD** | 11.17 ± 5.03 | 10.33 ± 5.44 | | 2.593 | **0.010** |
| **Employed** | | | | 0.923 | 0.337 |
| Yes | 713 (97.1) | 449 (98.0) | 1162 (97.5) | | |
| No | 21 (2.9) | 9 (2.0) | 30 (2.5) | | |
| **Type of employment** | **n=713** | **n=449** | **n=1162** | 101.505 | **< 0.001** |
| Legislator | 8 (1.1) | 7 (1.6) | 15 (1.3) | | |
| Administrator | 62 (8.7) | 20 (4.5) | 82 (7.1) | | |
| Manager/Professional | 74 (10.4) | 45 (10.0) | 119 (10.2) | | |
| Technician/Artisan | 85 (11.9) | 24 (5.3) | 109 (9.4) | | |
| Clerical worker | 28 (3.9) | 19 (4.2) | 47 (4.0) | | |
| Sales work | 37 (5.2) | 26 (5.8) | 63 (5.4) | | |
| Farmer | 197 (27.6) | 110 (24.5) | 307 (26.4) | | |
| Hawker/Trader | 65 (9.1) | 135 (30.1) | 200 (17.2) | | |
| Casual labourer | 30 (4.2) | 15 (3.3) | 45 (3.9) | | |
| Others | 127 (17.8) | 48 (10.7) | 175 (15.1) | | |
| **Income ('000)** | | | | 27.502 | **< 0.001** |
| < 50 | 473 (64.4) | 360 (78.6) | 833 (69.9) | | |
| 50 – 100 | 172 (23.4) | 69 (15.1) | 241 (20.2) | | |
| > 100 – 150 | 46 (6.3) | 14 (3.1) | 60 (5.0) | | |
| > 150 | 43 (5.9) | 15 (3.3) | 58 (4.9) | | |
| **Mean ± SD** | 97231.96±60530.23 | 44286.35±36385.57 | 71143.26±40000.00 | 1.868 | 0.062 |
| **Social class** | | | | 19.230 | **< 0.001** |
| Quartile 1 | 189 (25.7) | 106 (23.1) | 295 (24.7) | | |
| Quartile 2 | 110 (15.0) | 80 (17.5) | 190 (15.9) | | |
| Quartile 3 | 318 (43.3) | 235 (51.3) | 553 (46.4) | | |
| Quartile 4 | 117 (15.9) | 37 (8.1) | 154 (12.9) | | |
| **Insurance status** | | | | 4.711 | **0.030** |
| Yes | 51 (6.9) | 18 (3.9) | 69 (5.8) | | |
| No | 683 (93.1) | 440 (96.1) | 1123 (94.2) | | |
| **Household Size** | | | | 11.242 | **0.001** |
| ≤ 6 | 512 (69.8) | 360 (78.6) | 872 (73.2) | | |
| > 6 | 222 (30.2) | 98 (21.4) | 320 (23.8) | | |
| **Mean ± SD** | 5.68 ± 3.24 | 5.07 ± 2.28 | 5.62 ± 3.03 | 3.497 | **< 0.001** |
| **Area of residence** | | | | 10.087 | **0.001** |
| Rural | 284 (38.7) | 220 (48.0) | 504 (42.3) | | |
| Urban | 450 (61.3) | 238 (52.0) | 688 (57.7) | | |

p- value < 0.050 (statistically significant) $\chi^2$: Chi square test




$\chi^2 = 1.884$ p=0.170

Figure 1: Distribution of health shocks among household heads

Table 2: Socio-demographic and socio-economic factors for households who had health shocks

| Variables | Gender | | | | |
|---|---|---|---|---|---|
| | Male n=533 (%) | Female n=349 (%) | Total n=882 (%) | $\chi^2$/t | P |
| **Age groups** | | | | 17.456 | **0.004** |
| < 30 | 74 (13.9) | 81 (23.2) | 155 (17.6) | | |
| 30 – 39 | 178 (33.4) | 116 (33.2) | 294 (33.3) | | |
| 40 – 49 | 138 (25.9) | 78 (22.3) | 216 (24.5) | | |
| 50 – 59 | 69 (12.9) | 41 (11.7) | 110 (12.5) | | |
| 60 – 69 | 37 (6.9) | 22 (6.3) | 59 (6.7) | | |
| ≥ 70 | 37 (6.9) | 11 (3.2) | 48 (5.4) | | |
| **Mean ± SD** | 42.76 ± 13.81 | 38.96 ± 12.57 | 41.26±13.46 | 4.129 | **< 0.001** |
| **Marital status** | | | | 72.592 | **< 0.001** |
| Single | 12 (2.3) | 16 (4.6) | 28 (3.2) | | |
| Married | 514 (96.4) | 279 (79.9) | 793 (89.9) | | |
| Widowed | 4 (0.8) | 44 (12.6) | 48 (5.4) | | |
| Divorced | 0 (0.0) | 2 (0.6) | 2 (0.2) | | |
| Separated | 3 (0.6) | 8 (2.3) | 11 (1.2) | | |
| **Education of HH head** | | | | 0.508 | 0.992 |
| No formal education | 94 (17.6) | 63 (18.1) | 157 (17.8) | | |
| Primary | 87 (16.3) | 59 (16.9) | 146 (16.6) | | |
| Junior Secondary | 30 (5.6) | 22 (6.3) | 52 (5.9) | | |
| Senior Secondary | 155 (29.1) | 96 (27.5) | 251 (28.5) | | |
| Tertiary | 163 (30.6) | 107 (30.7) | 270 (30.6) | | |
| Others | 6 (0.8) | 2 (0.6) | 6 (0.7) | | |
| **Mean ± SD** | 10.98 ± 5.05 | 10.41 ± 5.41 | 10.75 ± 5.21 | 1.535 | 0.125 |
| **Employed** | | | | 0.824 | 0.364 |
| Yes | 517 (97.0) | 342 (98.0) | 859 (97.4) | | |
| No | 16 (3.0) | 7 (2.0) | 23 (2.6) | | |
| **Type of employment** | **n=517** | **n=343** | **n=859** | 99.009 | **<0.001** |
| Legislator | 6 (1.2) | 6 (1.8) | 12 (1.4) | | |

| | | | | | |
|---|---|---|---|---|---|
| Administrator | 46 (8.9) | 16 (4.7) | 62 (7.2) | | |
| Manager/Professional | 50 (9.7) | 33 (9.6) | 83 (9.7) | | |
| Technician/Artisan | 64 (12.4) | 15 (4.4) | 79 (9.2) | | |
| Clerical worker | 23 (4.4) | 11 (3.2) | 34 (4.0) | | |
| Sales work | 26 (5.0) | 22 (6.4) | 48 (5.6) | | |
| Farmer | 150 (29.0) | 88 (25.7) | 238 (27.7) | | |
| Hawker/Trader | 37 (7.2) | 103 (30.1) | 140 (16.3) | | |
| Casual labourer | 19 (3.7) | 14 (4.1) | 33 (3.8) | | |
| Others | 96 (18.6) | 34 (9.9) | 130 (15.1) | | |
| **Income ('000)** | | | | 20.227 | **< 0.001** |
| < 50 | 345 (64.7) | 272 (77.9) | 617 (70.0) | | |
| 50 – 100 | 121 (22.7) | 58 (16.6) | 179 (20.3) | | |
| > 100 – 150 | 35 (6.6) | 11 (3.20 | 46 (5.2) | | |
| > 150 | 32 (6.0) | 8 (2.3) | 40 (4.5) | | |
| **Mean ± SD** | 89945.51±48663.95 | 42428.08± 41398.28 | 71143.26±37975.31 | 1.820 | 0.069 |
| **Social class** | | | | 15.388 | **0.002** |
| Quartile 1 | 145 (27.2) | 93 (26.6) | 238 (27.0) | | |
| Quartile 2 | 87 (16.3) | 61 (17.5) | 148 (16.8) | | |
| Quartile 3 | 228 (42.8) | 175 (50.1) | 403 (45.7) | | |
| Quartile 4 | 73 (13.7) | 20 (5.7) | 93 (10.5) | | |
| **Insurance status** | | | | 2.231 | 0.135 |
| Yes | 30 (5.6) | 12 (3.4) | 42 (4.8) | | |
| No | 503 (94.4) | 337 (96.6) | 840 (95.2) | | |
| **Household Size** | | | | 13.661 | **<0.001** |
| ≤ 6 | 359 (67.4) | 275 (78.8) | 634 (71.9) | | |
| > 6 | 174 (32.6) | 74 (21.2) | 248 (28.1) | | |
| **Mean ± SD** | 5.97 ± 3.42 | 5.09 ± 2.23 | 5.62 ± 3.03 | 4.263 | **< 0.001** |
| **Area of residence** | | | | 3.923 | **0.048** |
| Rural | 225 (42.2) | 171 (49.0) | 396 (44.9) | | |
| Urban | 308 (57.8) | 178 (51.0) | 486 (55.1) | | |
| **Treatment centre** | | | | 18.364 | **< 0.001** |
| Public | 319 (59.8) | 193 (55.3) | 512 (58.0) | | |
| Private | 184 (34.5) | 153 (43.8) | 337 (38.2) | | |
| Alternative/Others | 30 (5.6) | 3 (0.9) | 33 (3.7) | | |

Table 3: Health expenditure of households who experienced health shocks in North Central Nigeria.

| | | **Mean ± SD** | | | | |
|---|---|---|---|---|---|---|
| **Health expenditure (₦)** | | **Male** | **Female** | **Total** | ***F*** | **P** |
| Health expenditure (Direct and indirect) | Mean SD | 28694.56 ± 18211.99 | 18380.91 ± 9845.78 | 23537.74 ± 14476.18 | 0.382 | 0.537 |
| Direct health expenditure | Mean SD | 24452.24 ± 13367.60 | 17041.84 ± 5112.09 | 20747.04 ± 3746.62 | 1.538 | 0.215 |
| Indirect health expenditure | Mean SD | 4242.32 ± 2445.23 | 1339.07 ± 6059.83 | 2790.70 ± 1927.57 | 3.674 | 0.056 |

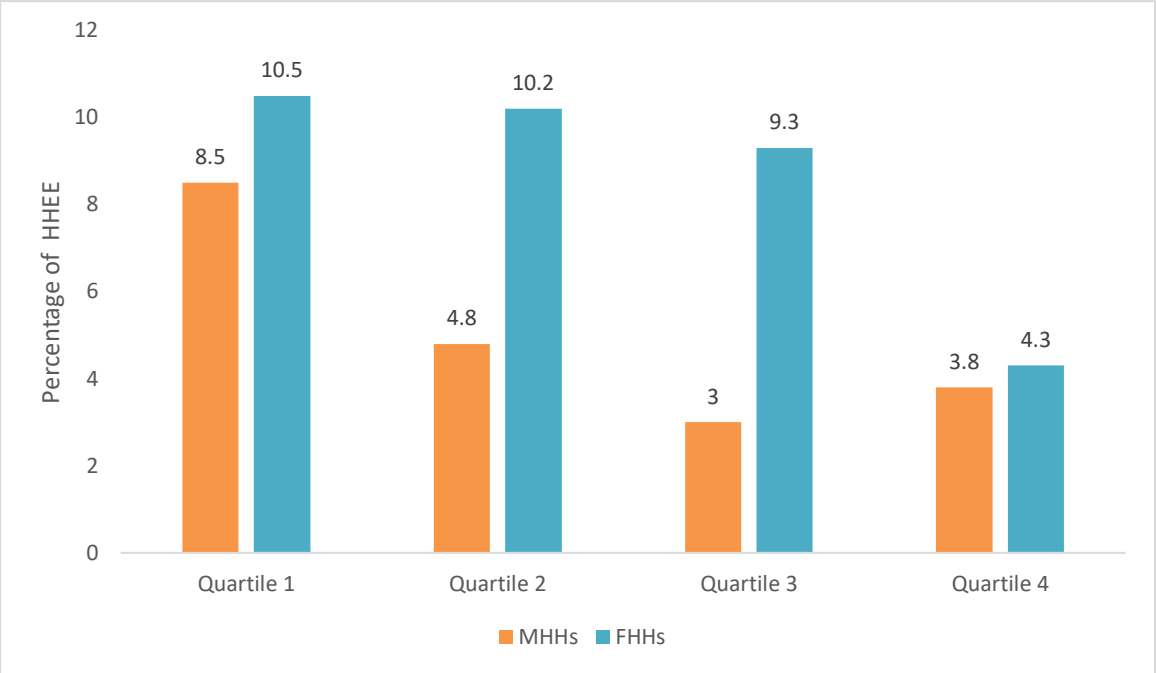



Figure 2: Household health expenditure as a percentage of the total household expenditure among the socio-economic groups in the rural and urban communities in the last 12 months.

Table 4: Self-reported effects of health shocks by household heads based on Gender

| **Effect** | **Gender** | | **Total (%)** | **$\chi^2$** | **ρ** |
|---|---|---|---|---|---|
| | **Male (%)** | **Female (%)** | | | |
| **Food effect** | | | | 0.680 | 0.410 |
| No | 230 (49.1) | 143 (46.1) | 373 (47.9) | | |
| Yes | 238 (50.9) | 167 (53.9) | 405 (52.1) | | |
| **Education** | | | | 0.151 | 0.698 |
| No | 352 (83.6) | 226 (82.5) | 578 (83.2) | | |
| Yes | 69 (16.4) | 48 (17.5) | 117 (16.8) | | |
| **Housing** | | | | 0.144 | 0.705 |
| No | 400 (97.3) | 265 (97.8) | 665 (97.5) | | |
| Yes | 11 (2.7) | 6 (2.2) | 17 (2.5) | | |
| **Assets** | | | | 3.933 | **0.047** |
| No | 389 (90.9) | 262 (94.9) | 651 (92.5) | | |
| Yes | 39 (9.1) | 14 (5.1) | 53 (7.5) | | |
| **Income** | | | | 10.157 | **0.001** |
| No | 291 (64.8) | 155 (53.1) | 446 (60.2) | | |
| Yes | 158 (35.2) | 137 (46.9) | 295 (39.8) | | |

Table 5: Coping mechanisms adopted by households during health shocks.

| | **Gender** | | | | |
|---|---|---|---|---|---|
| **Coping** | **Male (%)** | **Female (%)** | **Total n(%)** | **$\chi^2$** | **P** |
| Depleting assets | 53 (8.5) | 25 (6.8) | 78 (7.5) | 2.295 | 0.130 |
| Borrowing | 24 (3.8) | 13 (3.5) | 37 (3.6) | 0.381 | 0.537 |
| Savings | 378 (60.5) | 232 (63.2) | 610 (59.2) | 2.800 | 0.094 |
| Seeking help | 103 (16.5) | 75 (20.4) | 178 (17.3) | 0.310 | 0.577 |
| Insurance | 51 (8.2) | 18 (4.9) | 69 (5.8) | 4.711 | **0.030** |
| Others | 16 (2.6) | 4 (1.1) | 20 (1.9) | 3.454 | 0.063 |

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