

Assessment of Catastrophic Health Expenditure Incurred by Hypertensive Patients Attending a Semi-Urban Tertiary Hospital in South-South Nigeria

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Abstract

The cost of managing hypertension poses a huge financial burden on individuals and households, especially those paying out-of-pocket. This has a significant consequence on patients' compliance with management, and many have been thrown into huge financial crisis as a result of the catastrophic expenditure resulting from the management of hypertension. This study assessed the direct cost of hypertensive health care; determined the presence of catastrophic health expenditure (CHE) or otherwise and its associates/predictors (when present) among hypertensive patients accessing care in a semi-urban tertiary hospital in South-South Nigeria, using a cross-sectional study design. Three hundred and twenty respondents were selected using a systematic random sampling technique. Data on sociodemographic indices, monthly cost of accessing hypertensive care, cost of living and sundry matters were collected using a pre-tested interviewer-administered questionnaire and analyzed using IBM® SPSS version 23. The mean age of respondents was 54.8 years (± 16.5), and 43.4% was at least 60 years old. The majority of the respondents (55.9%), were females. The average monthly cost of managing hypertension was ₦36,814; with the highest amount spent on laboratory investigations and drugs. Nine out of ten respondents were exposed to CHE. Patients' educational status and presence of co-morbidities were associated with CHE. However being self-employed was the only predictor of CHE, with self-employed respondents having 5 times more odds of CHE than the unemployed. The study showed that the vast majority of hypertensives paying out-of-pocket suffer a substantial financial burden and are exposed to financial catastrophe. Governments at all levels need to formulate policies that will lead to increase in the access to affordable and timely quality health care for hypertensive patients in order to reduce the huge financial burden currently incurred by them.

Keywords: Respondents, Hypertension, Cost-of-care, Catastrophic health expenditure, Hypertensive patients.

INTRODUCTION

Worldwide, diseases of the heart, blood vessels and related structures, otherwise described as cardiovascular diseases (CVDs), constitute a major cause of adult morbidity and mortality (Gaziano *et al.*, 2006). Systemic hypertension is one of the major risk factors for CVDs (Stanaway *et al.*, 2018). It is the most common Non-Communicable Disease (NCD) condition in most Low and Medium Income Countries (LMIC) (Schutte *et al.*, 2021).

Systemic hypertension was responsible for approximately 11 million deaths globally in 2019, representing about 19% of all deaths (Lu and Lan, 2022). Hypertension is a global problem with a substantial financial burden on individuals and households (Wierzejska *et al.*, 2020). Over the years, the burden of hypertension in Nigeria has significantly increased, predisposing families to catastrophic health expenditure (Akinlua *et al.*, 2015). Catastrophic health expenditure (CHE) has been defined as out-of-pocket spending for healthcare that exceeds 10% of a household's income with the consequence that a household suffers the burden of the disease (Liu *et al.*, 2019). This is particularly worse when there is no financial risk protection and healthcare is financed by direct payment out-of-pocket (OOP). Direct OOP payment is a major financing mechanism for healthcare in developing countries (Jalali *et al.*, 2021). Out-of-pocket payment has been described as an unfair and inefficient way of paying for health services and can expose an individual to CHE (Onah and Govender, 2014). Catastrophic health expenditure has been determined at different household income thresholds ranging between 5 and 40% (Obembe *et al.*, 2021). However, the common thresholds used to determine that out-of-pocket spending is catastrophic are hypertensive care expenses exceeding 10 percent of total income or 40 percent of non-food expenditure (Londoño *et al.*, 2020).

Studies elsewhere have found various grades of CHE among respondents; 30.5% reported in Abuja, (Idris and Obansa, 2020); and 13.6% reported in a study in China (Zhang *et al.*, 2020). While hypertension poses a significant economic burden for patients, research on the economic consequences remains scarce (Gnugesser *et al.*, 2023). There is therefore need for information in this region of the country especially among hypertensive patients who have no access to health insurance or any third-party health financing system; as they may be particularly vulnerable to CHE and may therefore benefit from appropriate interventions.

MATERIALS AND METHODS

Ethical clearance: Appropriate research ethical clearance was obtained from the ethical and research committee of the Delta State University Teaching Hospital (DELSUTH) Oghara. (Reference number: HREC/PAN/2022/075/0520). Each study respondent was well informed about the aim of the study, benefits and risks; informed written consent was obtained from recruited patients; study respondents' confidentiality was maintained.

Study design: This is an institution-based descriptive cross-sectional study.

Study area: The Medical Out-patient Clinic and Family Medicine Clinic of (DELSUTH) Oghara, Delta State is the primary location of the study. DELSUTH Oghara is a tertiary hospital affiliated with Delta State University, Abraka. Oghara is a semi-urban town. It is the headquarters of Ethiope-West Local Government Area. The community is located in the heart of the tropical rainforest belt and in the South-South geopolitical zone of Nigeria. It lies between longitude 6.1002°E and latitude 5.5867°N. It occupies an estimated area of about 1175km² and has an adult population of 288,070, (National Population Commission, 2021).

However, the study population was not limited to Oghara, as patients come from all over the state and beyond to seek care because DELSUTH Oghara is a tertiary referral centre with a sizeable catchment area.

Study population: All consenting hypertensive adult patients attending the outpatient clinics in DELSUTH Oghara during the study period that were paying for their medical cost **out-of-pocket (OOP)** only.

Inclusion criteria for subjects: All consenting hypertensive adult patients paying their for medical care OOP attending outpatient clinics in DELSUTH Oghara for at least 3 months prior.

Exclusion criteria for subjects: (i) Pregnant women (ii) Patients too ill to respond appropriately. (iii) Patients with access to health insurance or other third-party payment system.

Sample size determination: The sample size for the study was calculated using the Fishers formula for sample size calculation for cross-sectional studies (Ibrahim, 2009). The estimated sample size at the 95% confidence interval and degree of desired accuracy was set at 0.05 and it yielded 318 patients (rounded to 320).

Sampling technique: Systematic random sampling technique was used to select eligible patients.

Study instrument and data collection method: Data collection was done by interviewing selected respondents. A pre-tested interviewer-administered questionnaire, whose contents were developed, based on the WHO protocol for a survey to determine the costs of a TB treatment program and cost of illness studies (World Health Organization Global TB Programme, 2015; Jo, 2014) was adopted for data collection. Information relating to patients: including biodata, indices of socioeconomic status, management of the disease condition and the cost involved in drugs procurement, investigations, consultations, refreshment, caregiver/companion, medical procedures, admission and transportation as well as any other cost incurred as a result of seeking healthcare was obtained from all selected respondents, constituting direct (medical and non-medical) cost. Also, information on the cost of living (estimated from the cost of essential items like food, clothing, transportation, electricity, and communication services) was obtained. The patient income flow was also approximately determined. Data collectors were scientific officers recruited from the staff of the hospital and were primarily not directly involved in the care of the patients. They were trained in the use of the tool.

Cost Analysis: The direct cost of treatment was computed by adding the cost of registration, medications, laboratory investigations, consultations, refreshment at the facility, caregiver/companion, medical procedures, admission and transportation to the facility.

Data Analysis: The filled questionnaires were checked for completeness and consistency and subsequently entered into an Excel spreadsheet and exported to IBM® SPSS 23 for analysis. Quantitative variables were summarized using mean, while categorical variables were summarized using frequencies and percentages. The analysis was performed in such a way that descriptive statistics were conducted to analyze information related to the characteristics of patients, management of the disease, patients' financial strength, and the costs associated

with essential cost-of-living activity and hypertensive illness, and these were presented in tables and charts. Chi-square test was conducted to assess the association between independent (sociodemographic/clinical) characteristics and the outcome variable at a level of significance set at $p < 0.05$. Binary logistics regression was performed to identify predictors of catastrophic health expenditure. The average monthly total health cost incurred by hypertensives was the summation of all the costs involved in accessing hypertensive care in the previous month. Therefore, information on direct costs associated with hypertension was gathered from the instrument of questionnaires as provided by the respondents. To obtain the average costs of treating hypertension, three fundamental assumptions were made: (i) There was no recognition of indirect cost because of the difficulties of the imputation of value to the indirect cost of illness (ii) Costs that falls within the common knowledge of the maintenance and care of hypertension were the main focus. (iii) Costs that are associated with high-end investigations and interventions like cardiac catheterization/angioplasty and advanced imaging such as magnetic resonance imaging (MRI) and computerized tomography (CT) scans were excluded due to their seldom nature and huge cost and propensity to distort data. Furthermore, catastrophic healthcare cost as a measure of financial risk protection was determined. The total direct cost incurred in managing hypertensive illness was compared against the household income. Accordingly, catastrophic health expenditure was defined as a direct cost exceeding 10% of the household income (Oyando *et al.*, 2019).

RESULTS

All 320 of the recruited hypertensive patients (respondents) participated in the study with a response rate of 100%.

The respondent age ranged between 18 to 99 years, with a mean age of 54.8 ± 16.5 years. A hundred and thirty-nine of the 320 respondents were aged 60 years or more, and the majority (55.9%), were females. Most of the respondents (85%) were married, and a few (1.3%), were widowed. About half (46.9%) of the respondents had tertiary education and more than half (53.8%) of them were self-employed. Most of the respondents (88.4%), earned at least thirty thousand naira monthly, while nearly all (99.1%), had a household income of at least thirty thousand naira (Table 1).

Table 1: Sociodemographic characteristics of the Respondents

Variables	Frequency n= 320	Percentage
Age group (years)		
<40	61	19.1
40-49	47	14.7
50-59	73	22.8
≥60	139	43.4
Mean age; 54.8 ± 16.5 years		
Sex		
Female	179	55.9
Male	141	44.1
Marital status		
Single	44	13.8
Married	272	85.0
Widowed	4	1.3
Educational status		
Nil formal	15	4.7
Primary	54	16.9
Secondary	80	25.0
Tertiary	150	46.9
Postgraduate	21	6.6

Employment status		
Unemployed	22	6.9
Self-employed	172	53.8
Civil servant	78	24.4
Retiree	48	15.0
Individual monthly income		
<₦30,000	37	11.6
≥₦30,000	283	88.4
Household monthly income		
<₦30,000	3	0.9
≥₦30,000	317	99.1

A hundred and fifty-eight (49.4%) of the respondents have had hypertension for over 5 years. About a third 102 (31.9%) of the respondents had one form of co-morbidity or the other, and 95 (29.7%) had a history of previous hospital admission. Among the 320 respondents, 72 (22.5%) had complications from hypertension, and a few 35 (10.9%), have a history of frequently running out of drug stock (Table 2).

Table 2: Clinical profile of the respondents

Variables	Frequency n=320	Percentage
Duration of illness (years)		
< 1	24	7.5
1 - 5	138	43.1
> 5	158	49.4
Mean duration of illness; 6.9 ± 6.2 years		
Co-morbidities		
Yes	102	31.9
No	218	68.1
Hx of Hospitalization		
Yes	95	29.7
No	225	70.3
Complications from hypertension		
Yes	72	22.5
No	248	77.5
Frequently run out of drug stock		
Yes	35	10.9
No	285	89.1
Missed clinic appointments in the past 1 year		
Yes	42	13.1
No	278	86.9

Figure 1 shows that the commonest co-morbidity reported by the respondents was diabetes 30 (29.4%) followed by peptic ulcer disease 16 (15.7%). The co-morbidities that were least reported by respondents were depression 1 (0.9%), and epilepsy 2 (1.96%) and both were categorized under others.

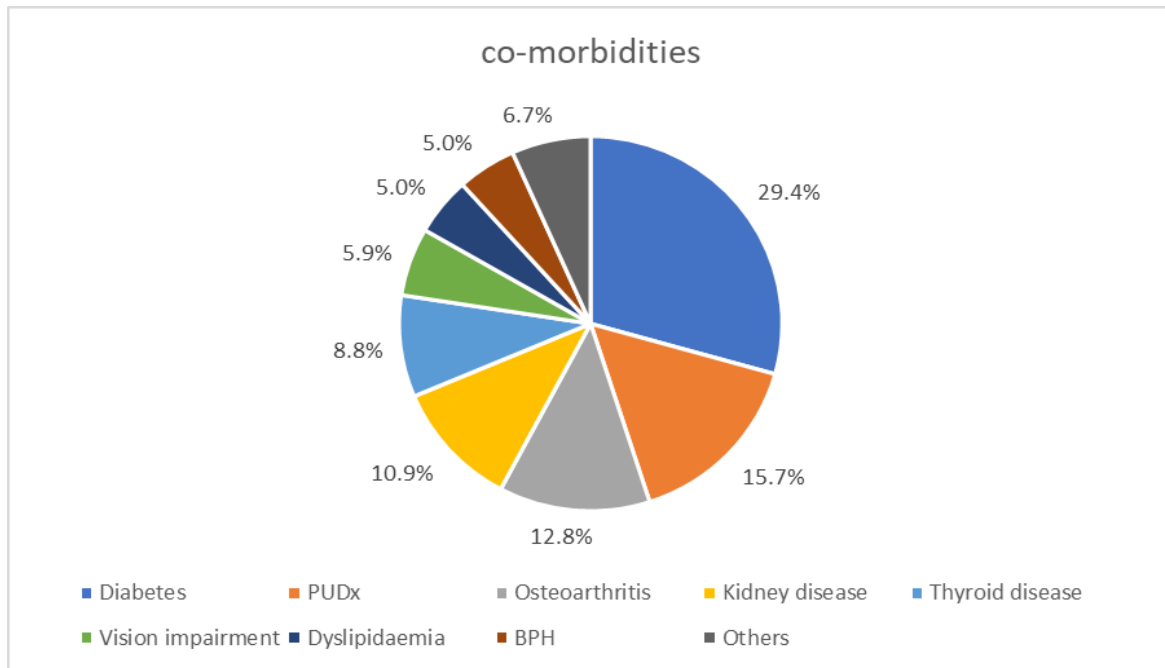


Figure 1: Co-morbidities among respondents.

Figure 2 shows that the most commonly self-reported complications of hypertension by the respondents was chronic kidney disease 21 (29.2%), followed by eye disease 20 (27.8%). The least reported complication was hypertensive heart disease 15 (20.8%)

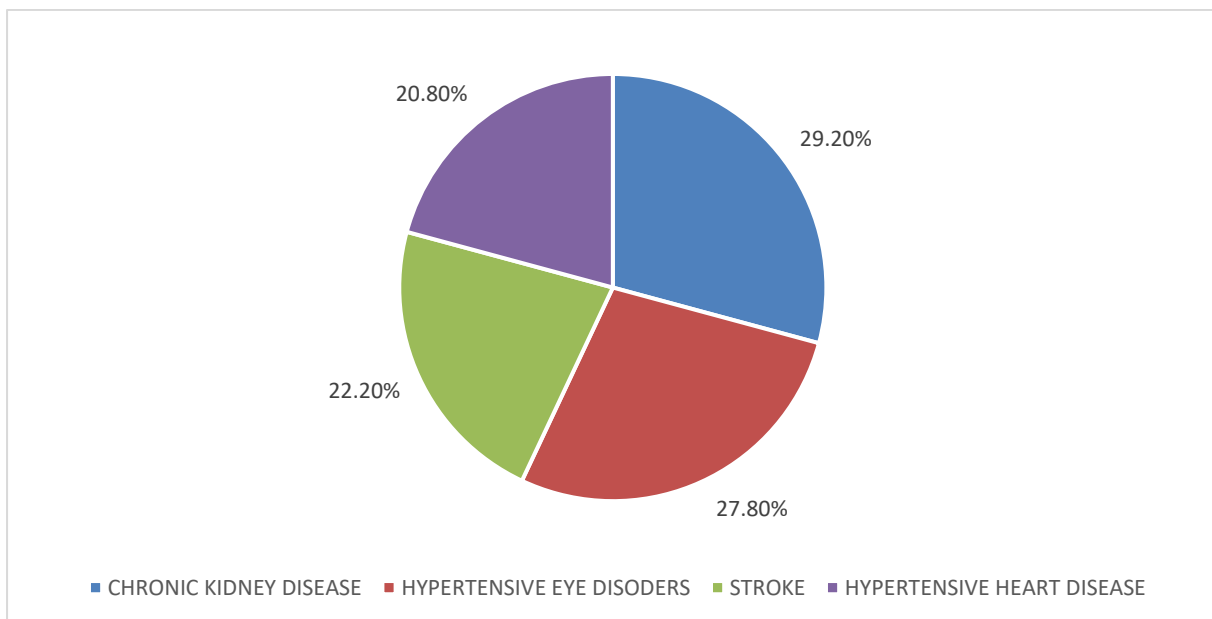


Figure 2: Complications of systemic hypertension reported by the respondents.

Out of the 320 respondents, only 14.4% had to pay for registration, and the average monthly expenditure was ₦2000 ± 0.0. All the respondents paid for consultations, and the average monthly amount paid was ₦1,025 ± 175.3, with a minimum and maximum amount of ₦1000 and ₦3,000, respectively. Almost all the respondents bought drugs in the previous month, and the average monthly drug expenditure, was ₦8187 ± 4087, with a minimum and maximum amount of ₦500 and ₦21,000, respectively. The highest total expenditure was spent on

laboratory investigations (₦4,051,800), while the least was for the cost of caregivers (₦3000) who accompanied the respondent to the clinic (Table 3).

Table 3: Respondents out of pocket expenditure on hypertensive care (Direct cost)

Direct cost (OPP expenditure)	Frequency (%)	Average monthly cost (SD)	Minimum	Maximum	Total expenditure
Registration	46 (14.4)	₦2000 (0.0)	₦2,000	₦2,000	₦92,000
Consultation	320 (0.0)	₦1,025 (175)	₦1,000	₦3,000	₦328,000
Lab Invest	314 (98.1)	₦12,903.9 (5240)	₦1,000	₦25,300	₦4,051,800
Medications	316 (98.8)	₦8187 (4087)	₦500	₦21,000	₦2,587,080
Procedures	18 (5.6)	₦21966.7(15324)	₦1,300	₦38,500	₦395,400
Admission	23 (7.2)	₦117065 (156109)	₦12,500	₦500,000	₦2,692,500
Transportation	320 (0.0)	₦4474.1 (1605)	₦1,500	₦9,500	₦1,431,700
Refreshment	51 (15.9)	₦3902 (5841.3)	₦500	₦25,000	₦199,000
Caregiver	3 (0.9)	₦1000 (0.0)	₦1,000	₦1,000	₦3000
TOTAL AVG					₦36,814

The highest total expenditure among all the categories of non-health-related household expenditure was spent on feeding (₦16,784,800), while the least was on clothing (₦1,331,000). The average monthly expenditure on feeding was ₦52,452.5 ± 2,7605.7, with a minimum and maximum amount of ₦2,000 and ₦145,000, respectively. The average monthly amount paid for house rent was ₦15,034.4 ± 6,467.8, with a minimum and maximum amount of ₦1000 and ₦52,000, respectively, while the average monthly amount spent on clothing was ₦4,573.9 ± 3,694.9, with a minimum and maximum amount of ₦1,000 and ₦31,000 respectively (Table 4)

Table 4: Respondents' Non-healthcare related household expenditure

Non-healthcare-related household expenditure (NHRHE)	Frequency (%)	Average monthly cost (SD)	Minimum	Maximum	Total expenditure
Electricity	320 (0.0)	₦6,530.9 (4,949.9)	₦1,000	₦31,000	₦2,089,900
Food	320 (0.0)	₦52,452.5 (2,7605.7)	₦2,000	₦145,000	₦16,784,800
Transport	320 (0.0)	₦8,926.9 (8,135.6)	₦2,000	₦47,000	₦2,856,600
House rent	320 (0.0)	₦15,034.4 (6,467.8)	₦1,000	₦52,000	₦4,811,000
Clothing	320 (0.0)	₦4,573.9 (3,694.9)	₦1,000	₦31,000	₦1,331,000
Communication	320 (0.0)	₦5,576.6 (2,751.7)	₦1,000	₦22,000	₦1,784,500

The average direct monthly expenditure on health among the respondent was ₦36814 ± 53490.7, with the minimum and maximum amounts being ₦9,500 and ₦538,000, respectively. The average non-health household expenditure in the previous month was ₦92680 ± 41162 with the minimum and maximum amounts being ₦16,500 and ₦207,000 respectively. The average monthly individual income was ₦89,703.1 ± 96,447, with a minimum and maximum amount of ₦0.0 and ₦750,000, respectively. The average monthly household income was ₦140,012.5 ± 118,076 with a minimum and maximum amount of ₦12,000 and ₦920,000 respectively (Table5).

Table 5: Summary of respondents' expenditure and income

Variables	Frequency (percentages)	Average monthly cost (SD)	Minimum	Maximum
Direct cost	320 (100)	₦36,814 (53490.7)	₦9,500	₦538,000
Non-health household expenditure	320 (100)	₦92680.6 (41162.6)	₦16,500	₦207,000
Food expenses	320 (100)	₦52452.5 (27605.7)	₦2,000	₦145,000
Non-food expenses	320 (100)	₦40228.1 (18176.1)	₦13,000	₦121,000
Total household expenditure	320 (100)	₦129494.6 (72166.5)	₦43,400	₦658,000
Individual income	320 (100)	₦89,703.1 (96,447)	₦0.0	₦750,000
Household income	320 (100)	₦140,012.5 (118,076.5)	₦12,000	₦920,000

SD - standard deviation

Most 292 (91.3%) of the respondents were exposed to catastrophic health expenditure (which is defined as health expenditure of at least 10% of monthly income) in the previous month, and about a third 111 (34.7%), were aware of the availability of health insurance services (Table 6).

Table 6: Catastrophic health expenditure and respondents' awareness of health insurance services

Variables	Frequency	Percentage
Catastrophic health expenditure		
Yes	292	91.3
No	28	8.8
Awareness of health insurance services		
Yes	209	65.3
No	111	34.7

Educational and employment statuses were the two factors that were significantly associated ($p < 0.05$) with respondents' exposure to catastrophic health expenditure. Approx. 93% of patients without formal education were exposed to CHE. However a significant majority of respondents with formal education were also exposed to CHE. Nevertheless, those with postgraduate education were relatively less affected (61.9%) compared to the other categories ($\chi^2 = 16.47$, $p = 0.001$). Also, a significantly high proportion of respondents with catastrophic health expenditure were present among those who were self-employed (93.6%) and retirees (100%), ($\chi^2 = 15.44$, $p = 0.001$). While relatively lower proportions of respondents with CHE were found among the unemployed (77.3%). All other sociodemographic characteristics were not significantly associated with CHE, though female gender showed some tendency (Table 7).

Table 7: Association between sociodemographic characteristics and catastrophic health expenditure (n=320)

Variables	Catastrophic health expenditure		Chi test P value
	No n(%)	Yes n(%)	
Age group (years)			
<40	3 (4.9)	58 (95.1)	4.45, 0.217
40-49	2 (4.3)	45 (95.7)	
50-59	6 (8.2)	67 (91.8)	
≥60	17 (12.2)	122 (87.8)	
Sex			
Female	11 (6.1)	168 (93.9)	3.452, 0.063
Male	17 (12.1)	124 (87.9)	
Marital status			

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Single	3 (6.8)	41 (93.2)	0.195, 0.847
Married	25 (9.2)	247 (90.8)	
Widowed	0 (0.0)	4 (100.0)	
Educational status			
Nil formal	1 (6.7)	14 (93.3)	16.47, 0.001
Primary	5 (9.3)	49 (90.7)	
Secondary	4 (5.0)	76 (95.0)	
Tertiary	10 (6.7)	140 (93.3)	
Postgraduate	8 (38.1)	13 (61.9)	
Employment status			
Unemployed	5 (22.7)	17 (77.3)	15.44, 0.001
Self-employed	11 (6.4)	161 (93.6)	
Civil servant	12 (15.4)	66 (84.6)	
Retiree	0 (0.0)	48 (100)	
Individual monthly income			
<₦30,000	4 (10.8)	33 (89.2)	0.223, 0.547
≥₦30,000	24 (8.5)	259 (91.5)	
Household monthly income			
<₦30,000	0 (0.0)	3 (100.0)	0.29, 1.0
≥₦30,000	28 (8.8)	289 (91.2)	

Having co-morbidities was the only clinical factor that was found to be significantly associated ($p < 0.05$) with respondents' exposure to catastrophic health expenditure. The proportion of respondents with catastrophic health expenditure was significantly higher among those with co-morbidities (96.1%) compared to those without (89.0%) ($\chi^2 = 4.372$, $p = 0.037$). All other studied variables were not associated with catastrophic health expenditure (Table 8).

Table 8: Association between respondents' clinical profile and catastrophic health expenditure (n=320)

Variables	Catastrophic health expenditure		Chi test P value
	No n (%)	Yes n (%)	
Duration of illness years)			
< 1	4 (16.7)	20 (83.3)	2.04, 0.36
1 - 5	11 (8.0)	127 (92.0)	
> 5	13 (8.2)	145 (91.8)	
Co-morbidities			
Yes	4 (3.9)	98 (96.1)	4.372, 0.037
No	24 (11.0)	194 (89.0)	
History of Hospitalization			
Yes	5 (5.3)	90 (94.7)	2.06, 0.151
No	23 (10.2)	202 (89.8)	
Complications from hypertension			
Yes	6 (8.3)	66 (91.7)	0.02, 0.887
No	22 (8.9)	226 (91.1)	
Run out of drug stock			
Yes	5 (14.3)	30 (85.7)	1.51, 0.21
No	23 (8.1)	262 (91.9)	
Missed clinic appointments in the past			
Yes	3 (7.1)	39 (92.9)	0.156, 1.0
No	25 (9.0)	253 (91.0)	

On binary logistics regression, being self-employed was the only predictor for suffering catastrophic health expenditure, while all the other factors were not significant. Self-employed

respondents had five times higher odds of suffering catastrophic health expenditure than those without formal employment (Table 9).

Table 9: Predictors of catastrophic health expenditure

Variables	aOR	95% Confidence Interval		p-value
		Lower	Upper	
Co-morbidities (No* vs Yes)	1.775	0.558	5.651	0.331
Nil-formal* vs primary	.875	0.090	8.494	0.908
Nil-formal* vs secondary	2.313	0.221	24.214	0.484
Nil-formal* vs tertiary	1.331	0.142	12.433	0.802
Nil-formal* vs postgraduate	.102	0.007	1.466	0.093
Unemployed* vs self-employed	5.121	1.502	17.453	0.009
Unemployed* vs civil servant	4.490	0.981	20.544	0.053
Unemployed* vs retiree	1096011582.7	0.000	.	0.997

*reference category; aOR- adjusted odds ratio

DISCUSSION

This study assessed catastrophic health expenditure among hypertensive patients paying out of pocket in a tertiary health facility in a semi-urban area. Financial burdens resulting from managing diseases affect various segments of society differentially, hence the importance of studies looking into them as a driver for social and policy change in healthcare financing. The aim of management of hypertension involves the control of the blood pressure as well as other cardiovascular risk factors, therefore the cost of drugs and relevant investigations are major components of health care expenditures that can adversely affect economic well-being of patient significantly (Gnugesser et al., 2023).

A significant majority of respondents in this study had individual income above the national minimum wage, and nearly all had a household income above the national minimum wage. The foregoing, while appearing impressive, has to be contrasted with the estimated mean monthly household expenditure of hypertensive respondents of approximately ₦37,000, in addition to medical expenses of other household members, indirect medical expenditures and other non-health-related expenditures. Furthermore, the income of respondents is negatively affected by the high price of goods and services, with consequent poor purchasing power. This situation is especially worrisome, as almost half of the respondents are personally responsible for financing their hypertensive care, while the rest depend on the nuclear and extended families for their care. This is usually the typical healthcare financing system in most poor SSA countries, where individuals pay out-of-pocket for their health needs and that of their relatives (Attia-Konan, 2019). While this social safety net provided by relatives has been around for a long time, it is grossly inefficient and limited in the care it can provide. (Attia-Konan, 2019).

The mean monthly cost of accessing hypertensive care revolved around expenditures in obtaining a hospital folder, consultation, laboratory, drugs, and transportation and sundry costs. The highest amount of money spent by the respondents was on drugs and laboratory investigations (Tope et al., 2023). This is not surprising considering the large number of cardiovascular investigations recommended for optimal hypertensive care (Ng and Lobo, 2018). Drug cost also constitutes a large chunk of the money spent by hypertensives. The direct mean monthly cost of accessing hypertensive care by respondents in this study, was approximately ₦37,000. This incurred cost is below that observed in a similar study in Ibadan, Southwest Nigeria (Adeniji, 2021): but higher than the cost revealed in an Ethiopian study

(Zawudie *et al.*, 2020). The differences could be partly due to temporal and inflationary rate differences.

Expectedly, respondents spend a significant amount of their income on food and other household expenses. Food cost is usually the highest in most households, closely followed by accommodation and transportation. Failure to provide adequately on this front can negatively affect patients' health, which may lead to further financial ruin and ultimately terminate in a vicious cycle. Inflation and other adverse economic indices may affect the ability of respondents to pay for needed goods and services that have a salutary effect on their health, e.g. ensuring adequate intake of fruits and vegetables or paying for a gym may be a daunting challenge for some hypertensives with already huge expense bill (Shahu *et al.*, 2019).

One of the main objectives of a robust health system is to protect the population against healthcare expenses. Ordinarily, not having any form of financial risk protection in the form of social or private insurance predisposes one to CHE. Hence, it is unsurprising that 9 in 10 respondents in this study experienced financial catastrophe due to healthcare costs associated with managing hypertension. This revelation is not unusual considering the present economic crisis post-Covid-19 pandemic with the global cost of living crisis, leaving people in poor income countries further exposed to the vagaries of hyperinflation and shortfall in disposable income. Nigeria is in a worse state than many others, a majority of Nigerians already live below the poverty line; thus, increased spending on health will further worsen an already perilous situation (Nigeria Overview, 2024). The degree of CHE among respondents in this study is much higher than the 30.5% reported in Abuja, Nigeria (Idris and Obansa, 2020) and the 13.6% reported in another study in China (Zhang *et al.*, 2020). The current study only studied hypertensive patients not enrolled in any form of insurance scheme compared to the other studies that studied all hypertensive patients in their clinics. Aside from this, the high prevalence reported in this study compared to the other studies could have resulted from differences in the socioeconomic status of the study participants and reflects the inequalities that exist in accessing healthcare. Catastrophic health expenditure is bound to occur when there is no form of financial risk protection for patients, as seen in this study. The direct implication is that people are further impoverished because of expenses incurred in caring for their illness. Catastrophic health expenditure happens more in poor and middle-income countries where most people pay out-of-pocket for health services (Sirag and Mohamed, 2021). In this study, the prohibitive cost of food and energy bills greatly contributed to considerable financial distress as families spent as much as half of their income on food and related matters.

Educational and employment statuses as well as co-morbidities were associated with catastrophic health expenditure. Higher education levels should ordinarily translate to better employability and improved income: this study revealed that respondents without formal education fared worse in terms of exposure to CHE. Respondents with postgraduate education were least likely to be affected by CHE; however, they were not immuned to CHE as about six in ten also suffered CHE in the previous month. Even the civil servant, who ordinarily should be able to absorb some financial shocks because of the stability of employment and fairly regular salaries, were not immuned to CHE. This showed that this is a general problem irrespective of employment status. Surprisingly, unemployed respondents in this study fared better compared to other respondents. This may be because of substantial social support from families and friends. Expectedly, more of our respondents with co-morbidities suffered CHE compared to those without. Patients with comorbidities will have to spend more resources on consultations, investigations and medications; also, they are more

likely to have complications which may require admissions, and this may lead to increased cost in accessing healthcare. Factors that have been reported to be associated with CHE in previous studies include rural residence, poor socioeconomic status, absent health insurance, large household size, unemployed household head, advanced age (elderly), hospitalization, chronic illness, utilization of specialist healthcare, and utilization of private healthcare providers (Eze *et al.*, 2022).

Among all the factors that were found to be associated with CHE in this study, being self-employed was the only factor that predicted being exposed to CHE. Self-employed respondents were five times more likely to have CHE compared to the unemployed. This is surprising, though may not be unconnected to the economic downturn suffered by small business owners during and post Covid19 pandemic (Charlene and Sabrina, 2022).

A major strength of this study is that it captured all the possible patient costs, including those incurred due to engaging caregivers when going to the health facility and for refreshments, unlike other studies that considered expenditures on drugs only. However, this study captured the direct cost associated with managing hypertension and did not capture the indirect and intangible costs. This could have led to underestimation of the actual cost associated with managing hypertension and, in essence, underestimated the burden of CHE. Notwithstanding, this study demonstrated that the burden of CHE among patients assessing care for hypertension is high. Lastly, respondents were asked to self-report their household income and expenditure without recourse to payslips or any official financial document. This could have caused either overestimation or underestimation of the actual income expenditure because of social desirability or fear. However, patient counseling and assurance of confidentiality were expected to have reduced this bias to the barest minimum.

CONCLUSION

This study reveals that, most patients accessing care for hypertension, suffered from catastrophic health expenditures, with business owners and the self-employed respondents being the worst affected. Lack of formal education and presence of co-morbidities also contributed significantly to exposure to CHE.

It is recommended that government and health managers should focus more on programs tailored to prevent and control hypertension. There is need for increased funding of programs and subsidy for management of hypertension (like HIV/TB). Governments at all levels need to increase awareness, coverage and access to health insurance.

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Conflict of interest

None declared

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