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An Estimate of Average Cost of Hypertension and its catastrophic effect on the people living with hypertension: Patients' perception from two Hospitals in Abuja, Nigeria

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Abstract: The study aimed to investigate the high prevalence and associated costs of treating hypertension, focusing on its direct average cost and its catastrophic effect on sufferers in Nigeria. Utilizing a descriptive survey research design, data were collected through structured questionnaires administered to patients at the University of Abuja Teaching Hospital and National Hospital, Abuja, Nigeria. The data were analyzed using SPSS version 22, with frequency and percentage calculations. Findings revealed that the average annual cost of treating hypertension was N145,086.12 per patient. Additionally, 191 (82%) patients undertook personal health spending, with 30.5% of the lowest-income patients experiencing catastrophic health expenditures. The results indicated that the cost of treating hypertension was significantly high among urban dwellers and catastrophic for the least earners. The study concluded that the average cost of treating hypertension in urban areas of Nigeria is substantial and particularly burdensome for low-income patients. The findings highlight the need for targeted healthcare financing policies and intervention schemes to alleviate the economic burden of hypertension on sufferers. The study's results are pertinent for policymakers, health planners, and administrators. They underscore the necessity for government intervention through healthcare financing policies and the establishment of programs to subsidize the costs of hypertension treatment. Additionally, the study provides valuable insights for researchers and academics, contributing to the existing knowledge on the economic burden of hypertension and informing future healthcare intervention strategies.

Keywords: Hypertension, Catastrophic spending, Personal spending, Least income, Urban dwellers, Intervention scheme

1. Introduction

The degree of prevalence and morbidity resulting from hypertension and its complications like stroke, cardiovascular disease, and ischemic heart attack are enormous and rising every day (Gaziano, Bitton, Anand & Weinstein, 2009; Ogah et al., 2012; Kengne, Mchiza, Amoah & Mbanya, 2013). The treatment of hypertension is accompanied by direct and indirect costs, which are very high. In the case of complications that result in stroke, it demands the assistance of caregivers to support the patients both physically and financially. This poses a substantial financial burden to caregivers. Indeed, the level of high private health spending undertaken by patients in a bid to adhere to drug prescriptions and curtail the complications of hypertension is alarming and has an adverse effect on the income of the individual(s) affected. Also, the savings and investment potentials of individual households affected by hypertension are likely to be depleted, given the burden of hypertension on households' income. In aggregation, the pandemic impact of hypertension as one of the non-communicable diseases (NCDs) has been established to be a threat to the sustainable economic growth and development of both developed and developing countries (Bloom et al., 2013). This is because the burden of hypertension may affect the ability of individuals to save and create other costs that affect the income of households. The level of investments and accumulation of capital is therefore affected, consequently impoverishing both individuals and reducing the economic growth of most nations.

The prevalence of hypertension and related implications in Nigeria is disturbing (Ogah, et al., 2012), though the proportion of people affected by hypertension and hospitalization may be reduced owing to continuous treatments, which involves high spending. It is also disturbing that there is a dearth of information relating to the number of deaths resulting from hypertension, the prevalence, and its degree of complications in most societies, especially where there is no or inadequate health records system. Most people may not even be aware that they are hypertensive owing to their attitudes toward medical check-ups to know their health status. Those who are aware may prefer to seek the attention of pharmacists to get drugs over the counter, which affects records/documentation of hypertensive households in Nigeria. This makes it difficult to appreciate the economic consequences of hypertension. Though

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few studies have investigated the prevalence and extent to which the burden of hypertension has affected households in Nigeria, little or no effort has been made to estimate the average cost of treating and controlling high blood elevation, especially in the urban city in the north-central part of Nigeria (Ogah et al., 2012). The recent study of Okubadejo, Ozo, and Agabi (2019) also dwells on the prevalence of hypertension and blood pressure profile among adults in Lagos, the western part of Nigeria, with no consideration of the cost of the disease to vulnerable persons.

Arising from the above, this study attempts to estimate the direct cost of treating hypertension and its catastrophic effect on the sufferers in Nigeria, providing empirical evidence from two hospitals (National Hospital and the University of Abuja Teaching Hospital) all in the Federal Capital Territory (FCT), Abuja, Nigeria. The novelty of this study lies in its comprehensive estimation of the economic burden of hypertension on individual households, which has not been extensively covered in previous research, particularly in the urban regions of north-central Nigeria.

2. Literature Review

It is estimated that over 20% of the world's adult population has hypertension, defined as elevated high blood pressure (HBP) of 140/90 mm Hg and above (World Health Organization, 2013). There is a dramatic change in the occurrence of HBP among adults of less than or equal to 60 years old. Stressing the prevalence of hypertension and its risk factors for other diseases like heart, brain, kidney, and others, WHO (2019) estimated that about 1.13 billion people have hypertension, with two-thirds living in low- and middle-income countries. The earlier study of Abegunde and Stanciole (2006) documented that about 50% of the productive age population is established to have hypertension, translating to approximately one billion individuals worldwide.

In Nigeria, a 1991 national survey on non-communicable diseases discovered that about 4.33 million Nigerians over 15 years of age were hypertensive, out of a population of 88.5 million at the time. The Federal Ministry of Health (1991) national survey showed that the prevalence of hypertension rises with age, and its prevalence proportion among males and females was 11.1% and 11.2%, respectively. Therefore, the overall prevalence as of 1991 based on the federal Ministry of health survey was 11.2%. However, given the shift in the cut-off point to 140/90 mmHg, the prevalence of hypertension is now higher by 20% in the population. The high morbidity and mortality rate, low life expectancy, disability, and low productivity due to hypertension are becoming prevalent in Nigeria (Lambo, 2007; Unadike, Essien, Akpan, Peters & Essien, 2013; Kengne et al., 2013; Eze & Kalu, 2014; Odili & Abatta, 2015). Therefore, the burden of direct and indirect costs of hypertension to patients and their caregivers is likely to negatively affect their income and overall economy. This may be due to high costs associated with complicated conditions that reduce national output in both developed and low-middle-income countries. Emphasizing the burden of hypertension, Dzau and Celynne (2019) suggested that to ease the future burden of the disease, there is a need to stress the convergence of digital data, biotechnology, and biomedical sciences coupled with their implementation in healthcare delivery.

Evidence of catastrophic burdens associated with non-communicable diseases to the economies of many nations can be gleaned from studies (Bloom et al., 2013; Jha, Nugent, Varguet, Bloom, & Hum, 2013; Webb & Conrad, 2012). To estimate the cost of blood pressure control in Nigeria, the study of Ilesanmi, Ige, and Adebiyi (2012) employed a chart review of the cross-sectional survey of 250 rural patients with primary hypertension at a regional hospital in Southwest Nigeria and discovered N1,440 as the mean cost of monthly treatment of hypertension in the region. A recent study by Zhang, Wang, and Sun (2020) submitted that hypertension is a public health challenge. Their study employed logistic regression techniques for a randomized block of 400 patients in six selected provinces in China and suggested that financial incentives play a vital role in making patients adhere to the treatment, thereby controlling the disease and easing the burden on the sufferers.

Bakare et al. (2016) employed a survey method to examine antihypertensive use, prescription patterns, and cost of medications in a teaching hospital in Lagos, Nigeria. They discovered that the most prescribed antihypertensive drugs were diuretics (64%), followed by beta-blockers (63%), calcium channel blockers (53%), while the least prescribed drugs were alpha-blockers (9%). Their study revealed that the average cost of drugs per individual in treating hypertension in a month was N2,045. To estimate annual total medical expenditures associated with hypertension by diabetes status in the United States (US), Wang, Zhou, Zhuo, and Zhang (2017) utilized the two-part econometric and generalized linear model to estimate data on the medical expenditure panel survey and documented that hypertension patients with diabetes have increased medical expenditure by $2,753 more than non-diabetes hypertension patients. Kirkland et al. (2018) national survey on the trends in healthcare expenditures for patients with hypertension in the US revealed that the unadjusted mean annual medical expenditure attributable to patients with hypertension was $9,089 and concluded that individuals with hypertension spent about $2,000 higher than non-hypertensive patients annually. This indicates potential economic burdens on those living with hypertension.

Estimating the cost of hypertension and associated factors in Ethiopia, Adane, Atanfu, and Aschalew (2020) undertook a survey at the University of Gondar Comprehensive Specialized Hospital in the Northwest of Ethiopia. They analyzed 442 adult hypertensive patients' responses and discovered that the cost of treating hypertension per individual patient was US$91.72 per annum. The study revealed that medical costs constituted the highest among the direct cost components of treating hypertension and recorded socioeconomic status and government

employment as major factors associated with the high cost of managing and treating hypertension in the region. This aligns with an earlier study by Oyando et al. (2019) that utilized a cross-sectional survey to examine the patient costs associated with obtaining care for hypertension in public healthcare facilities in Kenya. Their study showed that the overall mean annual direct cost of treating hypertension in patients in Kenya is US$304.8, while the indirect cost was US$171.7. The study further revealed the catastrophic cost effect of treating hypertension, which was put at 43.3% in Kenya. However, there is an argument that the cost of hypertension, especially in catastrophic scenarios, can be minimized through adherence to medications and self-management. To substantiate this, Li and Hesketh (2020) employed a systematic and meta-analysis approach to investigate the effectiveness of self-management of hypertension among adults who use mobile health. Five electronic databases, including the snowballing method, were systematically utilized to gather 24 published related studies from the period between January 2010 and September 2019, and their findings revealed that 16 out of the 24 reviews reported better medication adherence and behavioural change while eight showed no significant change. This lends support to the effectiveness of adherence to medication and self-management of hypertension using mobile health care to reduce associated direct costs, thereby avoiding catastrophic health effects.

3. Methodology

A survey method was conducted in two tertiary hospitals (National Hospital and University of Abuja Teaching Hospital) in the federal capital territory, Abuja. The instrument of questionnaires were administered to patients who visited the hospitals from February to March 2018. Information relating to the cost of drugs used, diagnostics, consultations, and transportation constituting direct cost was obtained. The sample size of 233.99 for the study was derived from the morbidity population of patients living with the disease in 2016, which was estimated to be 607 hypertensive patients attending the National Hospital. This is assumed to be a finite number, which represents the entire population of the study. Given this, we are ninety-five (95)% confident that the percentage has been estimated to be within + or – 5% of the true value. This means that the allowable error accommodated in this study is five (5)%or 0.05. The formula, based on the assumption of the finite population, was used in line with Krejcie and Morgan (1970) reported in (Kado, Bala, & Dandajeh, 2016).

The finite population formula is stated thus:

$$n = \frac{Z^2 * N * P * (1-P)}{ME^2 * (N-1) + (X^2 * P * (1-P)}$$

Where

n = expected sample size

Z^2 = the confidence level

ME^2 = the desired margin of error

N = population size

P = proportion of the population (assumed to be 0.50 since this would provide the maximum sample size.

Where:

Z^2 =1.96 as per the table of the area under the normal curve for the given confidence level of 95%

ME^2 = 0.05 since the estimate should be within 5% of the true value

P = 0.50 as we want the most conservative sample size of the population

Note: N is the prevalence population of morbidity resulting from hypertension, which is 607 based on the year 2016 morbidity data from the National Hospital health records.

Employing the formula in the case of finite population, we have thus:

$$n = \frac{Z^2 * N * P * (1-P)}{ME^2 * (N-1) + (Z^2 * P * (1-P)}$$

$$n = \frac{(1.96)^2 * 607 * 0.5(1-.5)}{0.05^2 * (607-1) + (1.96^2 * 0.5(1-.5)}$$

$$n = \frac{3.8025 * 607 * 0.25}{(0.0025 * 606) + 3.8025 * 0.25}$$

n = 577.029/1.515+0.951

n = 577.029/2.466

n = 234

Therefore, the most conservative sample size needed in this study was approximately 234. Given the sample size determined for this study, and for non-response purposes, about 300 questionnaires were administered in the two hospitals. Out of the 300 questionnaires administered, 255 were returned. From the 255 returned, 22 were not completely filled, leaving about 233 for analysis. When subjected to the reliability test, a listwise exclusion of one (1) questionnaire was carried out by SPSS and left 232, representing 99.4% valid cases for analysis. The coefficient of reliability, as documented by Ndiyo (2015), is given as (1- excluded questionnaire/valid cases for analysis) x 100 = 1/232x100, which gave 99.57%, indicating the reliability of the instrument used in the study. Descriptive statistics comprising mean, percentage, and frequencies were calculated.

3.1 Ethical Approval

Prior to the administration of questionnaires, ethical approval was obtained from the ethical and research units of the two hospitals.

3.2 Procedures For Quantification Of Average Cost Of Treating Hypertension In Abuja

To quantify the average annual total cost an individual patient incurs to control their blood pressure, the total cost of illness or diseases is regarded as the summation of direct and indirect costs as stressed by Chao (2013). Therefore, information relating to direct costs associated with hypertension gathered from the instrument of questionnaires as provided by the respondents was utilized. This is supplemented with information obtained through interviews with health practitioners. To obtain the average costs of treating hypertension, the study made three fundamental assumptions which are:

- There is no recognition of indirect cost because of the difficulties of the imputation of value to the indirect cost of illness without recourse to co-morbidity.
- Costs that fall within the common knowledge of the maintenance and cure of hypertension were focused.
- Costs that are associated with chronic situations that may lead to brain haemorrhage and other complications were exempted due to their seldom nature and huge cost.

4. Results And Analysis

The 255 participants were included in the study, and 232 valid cases were analyzed. Of the 232 respondents, 118 (50.9%) are women, while 114 (49.1%) are men. Respondents' age distributions are 15-30 years 10 (4.3%), 31-60 years 165 (70.8%), and ≥61 years 57 (24.5%). Also, 30.5%, 16.7%, 18.9%, and 21.9% of the respondents reported annual earnings of <N180,000; N190,000 to N490,000; N500,000 to N990,000 and >N1,000,000 respectively.

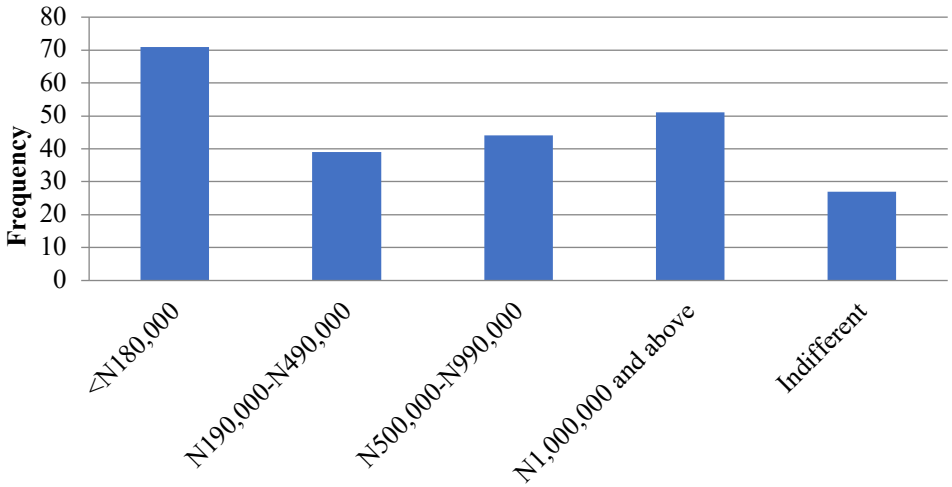

Figure 1: Distribution of Respondents' Estimated Annual Income, Source: Author's Field Survey, 2018.

Figure 1 shows the distribution of the respondent's annual income, which estimated the income group of persons that suffered more from the burden of hypertension. It was observed from the table that about 71 of the respondents, which were 30.5% of the population, earn an income less than or equal to N180,000 per annum. Again, about 39 of the respondents, which constituted 16.7% of the population, fell within the income bracket of N190,000 to N490,000 per annum. Besides, 44 of the respondents, which represent about 18.9% of the distribution, earn an income between the ranges of N500,000 – N990,000. In addition, about 51 of the respondents who were 21.9% of the population of the study earn an income of about N1,000,000 and above. The respondents who were indifferent or did not specify their earned income were 27 in number and represented about 11.6% of the population of the study. This indicated that the income group of ≤180,000 (30.5%) per annum suffers more from hypertension than other income groups of the respondents as they constituted more numbers among the respondents of investigation in the study.

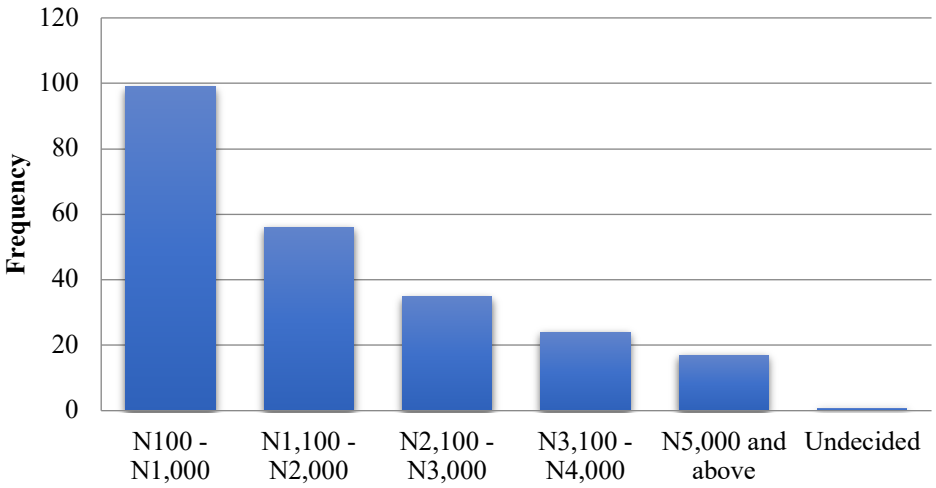

Figure 2: Distribution of Respondents Spending on Transport to Hospital each time of visit. Source: Author's Field Survey, 2018.

Figure 2 denoted the percentage distribution of respondents' spending on transportation to the hospital each time of visit. To determine the extent of the burden to the sufferer, it was observed from Figure 2 that 99 of the respondents, which constituted 42.5% of the population of the study, spent between N100 to N1,000 on transportation each time of the visit to the hospital. On the other hand, 56 of the respondents, which represented 24% of the population of the study, spent between N1,100 to N2,000 on transportation each time the visited the hospital. Also, 35 of the respondents, which represented 15% of the population of the study, spent between N2,100 to N3,000. Equally, 24 respondents constituted about 10.3% of the population of the study, spent between N3,100 to N4,000 on transportation on each visit to the hospital. Similarly, 17 respondents, which represented 7.3% of the population of the study, spent about N5,000 and above. This group of respondents spent more on transportation each time they visited the hospital. Therefore, in the distribution, it was discovered that patients who spent between N100-N1,000 on transportation to the hospital are more. In contrast, those who spent N5,000 and above are less, indicating that transportation as a component of direct cost varies among patients and constitutes a minimum part of the direct costs of hypertension.

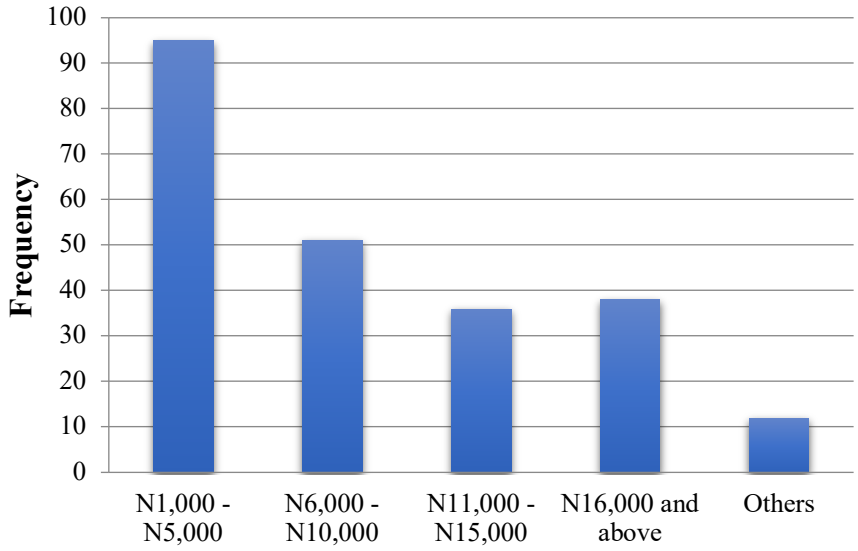

Figure 3: Distribution of Respondents' Monthly Spending on Hypertensive Drugs. Source: Author's Field Survey, 2018.

Figure 3 shows the frequency distribution of respondents' monthly spending on drugs. The figure documented that about 95 of the respondents (40.8%) spent between N1,000 to N5,000 monthly on drugs, while 51 of the respondents (21.9%) spent about N6,000 to N10,000 on drugs monthly. In the same vein, 36 respondents or 15.5% spent between N11,000 to N15,000 on drugs monthly. Again, 38 respondents, which represented 16.3%, spent N16,000 and above on drugs monthly. Other respondents who were not specific or do not have adequate knowledge of their spending on drugs regularly were 12, which represented about 5.2% of the population of the study. Figure 3 indicated that most patients spent between N1,000 – and N5,000 while the least patients spent between N11,000 – and N15,000 monthly on drugs.

Table 1: Computation of Average Annual Spending Attributable to Hypertension per Individual

C1. Average Unit Cost of Drugs (₦)	C2. Number of Respondents	1*2 = (C3) Total cost of Drugs (₦)	C4. Diagnosis fee (₦)	C5. Consultation Fee (₦)	C6. Average Transport cost (₦)	C7. Grand Total Average Annual Spending (₦)
3000	95	285,000	20,000(231)	808.20(4)	550(99)=54,450	
8000	51	408,000			1550(56)=86,800	
13,000	36	468,000			2,550(35)=89,250	
18,000	38	684,000			5,450(17)=92,650	
Total	220	1,845,000	462,000	3,232.80	408,350	
Average Monthly Spending		C3 total / C2 total = 8,386.36	C4 total / 231 = 20,000/12 = 1667	C5 total / 12 = 269.40	C6 total / 231 =1,767.75	12,090.51
Total Average Annual Spending					C7*12	**145,086.12**

Source: Author's Field Survey /Computation, 2018.

Table 1 shows detailed computations of the average annual direct cost of the burden of hypertension incurred by individual patients in Nigeria as gleaned from the evidence from the Federal Capital Territory, Abuja. The components of the attributable cost used in this study were: monthly spending on drugs, transportation cost to the hospital, consultation, and diagnosis fees. The attributable money spent was derived from the information provided by the respondents. It was observed from Table 1 that individual patients spent a minimum average of N12,090.51 monthly to manage hypertension. This translated to N145,086.12 annual average expenditures on hypertension per hypertension patient. The total annual average was derived by taking the respective individual spending on drugs, and transportation costs vary among individual patients depending on the type of drugs and their locations. The diagnosis was taken as a fixed amount, which was paid once, and the consultation fee was regarded to be paid at least four times a year as the time of visit for consultation annually. The average number of times of the visit to the hospital owing to hypertension was limited to four times per annum as gathered from the respondents, but this varies when the health condition becomes complicated. The total cost was obtained by taking the sum of the product of the 231 respondents' cost of consultation and diagnosis and the product of the cost of drugs of 220 respondents who know the cost of their medications. Hypertension patients with a similar pattern of spending were grouped in the same class. Therefore, the average monthly hypertension spending by the individual patients, as demonstrated in Table 1, was derived by summing the columns of the 7th row, which are C3+C4+C5+C6 = C7. Where C= represents columns as stated in Table 1. Therefore, the total average annual annual spending on hypertension was obtained by multiplying the individual average monthly spending by 12 as presented in column seven (C7) of the 8th row in Table 1. To determine whether or not the individual spending on hypertension is a burden or not, the study further estimated the ratio of out-of-pocket spending on hypertension to the income groups of the individual patients using data gathered from interviews and questionnaires. This enabled the study to establish that spending on hypertension was catastrophic relative to the income bracket of the sufferers.

4.1. Determination Of Catastrophic Effect Of Hypertensive Spending

Catastrophic spending is defined as out-of-pocket spending for healthcare that exceeds a certain proportion of a household's income, with the consequence that a household suffers the burden of disease (Ekman, 2007). The common thresholds used to determine that out-of-pocket spending is catastrophic are 10% of total income or 40% of non-food income (Xu, Evans, Carrin, & Aguilar-Rivera, 2005; Wagstaff & Doorslaer, 2002). Additionally, a household is considered impoverished when medical expenditure causes individuals to fall below the poverty line. Xu et al. (2005) measured catastrophic spending based on capacity to pay and used 40% as a benchmark for out-of-pocket spending on health to be regarded as catastrophic. Wagstaff and Doorslaer (2002) calculated catastrophic spending as the percentage ratio of total out-of-pocket spending on health for household i (Ti) to total expenditure on food for household i (Xi):

That is Ti/Xi

Where

Ti = total out-of-pocket spending on health

Xi = total income equal to total expenditure less food expenditure.

In this study, Xi is defined as the total annual income of the patients without consideration to food expenditure. Given this, the study determines catastrophic health spending among hypertension patients as the ratio of average annual hypertension expenditures to annual income groups of the patients. This is calculated as follows:

i. Catastrophic Spending (CS) of patients with income less than N180,000/annum = Ti/Xi100 = 145,086.12/180,000100 = 80.60%.

The result indicates that patients in the income bracket of less than N180,000 per annum spent about 80.6% of their annual income on average, which was greater than both 10% and 40% as the lower and upper thresholds of determining catastrophic health spending, respectively. This implied that hypertension-related expenditure is catastrophic to the least-income respondents who consisted of 30.5% of the respondents with an annual average income of less than or equal to N180,000. The results demonstrated that the lower income earners who suffered from hypertension or blood pressure and undertook out-of-pocket spending to curtail the disease are not only more likely to experience a significant burden of hypertension but also likely to be impoverished by the disease. This occurred as a larger fraction of the individual patients' income is channelled to the management of hypertension.

ii. Catastrophic Spending (CS) of patients with an average annual income group of N340,000 = 145,086.12/340,000100 = 42.67%.

This indicated that about 16.7% of this group's spending on health was catastrophic, given the CS, which was greater than both thresholds of 10% and 40%. This lays bare that individual patients in this group are impoverished by their spending on managing hypertension. Therefore, the result indicated that the income level of individuals determines the degree of catastrophic health spending exposed by patients.

iii. Catastrophic Spending (CS) of patients with an average annual income of N745,000 = 145,086.12/745,000100 = 19.47%.

This shows that about 18.9% of the respondents, as presented in Table 1, undertook catastrophic spending as the CS of this income group was approximately 9.5% greater than the lower threshold but less than the higher benchmark of 40%. This showed that the wealthier an individual, the less likely they are to experience catastrophic spending, thereby less likely to experience a burden of disease that may lead to impoverishment.

iv. Catastrophic Spending (CS) of patients with an average annual income of N1,000,000 = 145,086.12/1,000,000*100 = 14.51%.

This suggested that about 21.9% of the respondents have catastrophic spending of about 4.5% (i.e., 14.5% -10%), indicating that the higher the income of the patients, the lesser the likelihood of experiencing catastrophic spending and being impoverished by out-of-pocket spending. The result showed a mild effect of impoverishment resulting from hypertension spending among high-income groups of individual patients.

4.2. Determination of The Level Of Enrollment In the Government Intervention Scheme.

Given the level of catastrophic spending individual patients were faced with, the study discovered that a substantial number of the participants were not enrolled in government health intervention schemes like the National Health Insurance Scheme (NHIS). However, the findings also illustrated that those enrolled do not enjoy full coverage, as depicted in Figure 4.

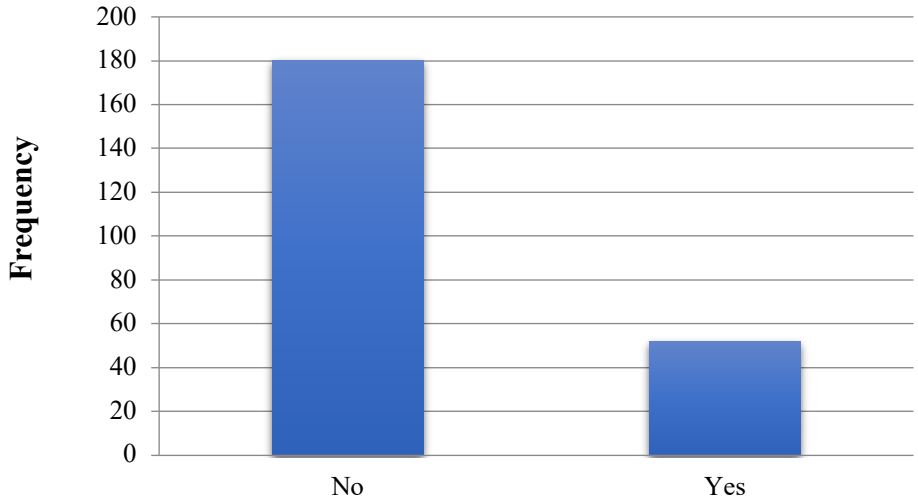

Figure 4: Frequency Distributions of Respondents Enrolled in any Government Intervention Programme in curtailing Hypertension. Source: Author's Field Survey, 2018.

5. Discussion

The study was undertaken to estimate the direct costs of hypertension to the sufferer using two hospitals (National Hospital and University of Abuja Teaching Hospital), both in Abuja. A survey was conducted to determine the income levels of the participants and the amount directly related to maintenance and treatments, including the cost of drugs, consultations, diagnosis, and transportation spent annually by individual patients. This was primarily to establish the degree of catastrophic spending and the impoverishing tendency of hypertension on the sufferers.

The findings revealed that income levels of individuals remained a strong determinant in defining the level of catastrophe and impoverishment faced by individual patients. The average annual total cost attributable to hypertension was N145,086.12 per patient. About 191 (82%) of respondents undertook out-of-pocket spending. Hypertension-related expenditure was found to be catastrophic for 30.5% of the least-paid respondents.

Regarding enrollment in any government intervention for subsidizing the cost of controlling hypertension, it was established that only 22.4% of patients were enrolled in government intervention, specifically the National Health Insurance Scheme (NHIS), while about 77.6% of patients were not enrolled in any government intervention for financing the cost of hypertension. This demonstrated that the majority of hypertension patients do not benefit from any government intervention, leading to significant out-of-pocket health spending. About 9.5% of patients who enrolled in NHIS enjoyed between N1,000 and N5,000 monthly intervention, while about 4.7% enjoyed between N6,000 and N10,000 monthly intervention. About 1.7% of patients claimed to benefit between N11,000 and N15,000 monthly intervention, and only 1.3% received N21,000 and above monthly intervention. Significantly, about 82.3% had no intervention and undertook out-of-pocket spending, posing a significant catastrophic health spending burden on individual patients living with the disease.

6. Conclusion

To determine the average annual cost of treating hypertension for people living with hypertension, a survey method was employed using questionnaires administered to sufferers who visited two hospitals (National Hospital and University of Abuja Teaching Hospital) in Abuja. Information on the income levels of the participants and the amount directly related to maintenance and treatments, including the cost of drugs, consultations, diagnosis, and transportation spent annually by individual patients, was obtained. The study established that the average annual total cost attributable to hypertension was N145,086.12 per patient. About 191 (82%) of the respondents undertook out-of-pocket spending, and hypertension-related expenditure was found to be catastrophic for 30.5% of the least-paid respondents.

7. Limitations And Future Recommendations

Obtaining information on the indirect burden of hypertension, such as productivity loss, disability-adjusted life costs, and data on the value of statistical life remained challenging due to the lack or inadequacy of data on these variables. Some of the available data are imputed ones, characterized by inexactness. This remains a major challenge for this study, limiting the estimate to the annual direct average cost of hypertension for the sufferers. The study recommends an indirect health financing intervention program that will assist in reducing the catastrophic effect of hypertension spending on individuals through subsidies on hypertensive drugs at pharmaceutical levels. This means there should be a bilateral partnership arrangement between governments of various countries and pharmaceutical industries regarding the regulation of the cost of hypertension drugs. This can be achieved by sharing part of the manufacturing cost of drugs for controlling and treating hypertension by the government to enable patients to obtain them at lower costs. Enrollment in government schemes (both at national, state, and local levels) to ease access to healthcare delivery should be emphasized, and further studies on these spheres of the burden of hypertension are recommended.

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