

Effect of Income Shortfall on Health Status of Retired Hypertensive Subjects in South Western, Nigeria.

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Abstract

Background: Irregular and reduction in income as a result of retirement places a great burden on retirees especially in the area of health. Retirees because of age are more likely to be hypertensive with greater demand for increased health spending. Therefore, this study provides new information on the effect of income reduction on the health status of retired hypertensive subjects in South-Western Nigeria.

Methods: A structured questionnaire was administered to 247 respondents from three specialist clinics in Oyo and Osun States, Nigeria between January and October 2019. Information obtained includes demographic characteristics, health financing methods, and coping strategies. Data were analyzed using descriptive statistics and logistic regression methods.

Findings: The study revealed that pensions paid were irregular to most of the retirees. Support from children was largely a source of support to these retirees as posited by 45.3% of study participants and the children have been financing their medical expenses. Using logistic regression, age ($B=-4.87$, $p<0.05$) had a significant negative relationship with the health status of retirees. Also, education ($B=1.260$), spouse occupation ($B=1.182$), spouse average income ($B=2.314$), and monthly pension ($B=1.831$) had a positive relationship with the health status of the retirees.

Conclusion: The income shortfall of retired hypertensive subjects has a significant negative impact on their health status. Enhancing health financing and adopting highly subsidized health care plans for the elderly will go a long way to reduce unwarranted deaths in our elderly population.

Keywords: Income shortfall, Hypertension, Health Status, Retirees, Nigeria

Introduction

Retirement, defined as a complete withdrawal from the labour force¹ is accompanied by many basic lifestyle changes. For instance, time availability, income streams, social networks and social status are being affected.^{1,2} These changes are likely to affect the retiree's state of health.² Retirement has been said to increase the risk of being diagnosed with a chronic condition such as heart attack, stroke or cancer.^{1,2}

In economic theory, health is considered to be both an investment good, allowing for higher productivity and fewer sick days, and a consumption good which provides direct utility.³ Incentives to invest in health which could bring about raised productivity are very rare. However, retirees still benefit from investing in health because it increases their utility. The degree to which retirement decisions are driven by health is a major concern for both academic and policy makers.⁴ The health-retirement link is particularly germane to the reform of public pension programmes. The Federal Government of Nigeria introduced the Pension Reform Act of 2004. The Act abolished non-contributory pension and introduced contributory pension scheme⁵. Despite the new pension Act, many retirees still find it difficult assessing gratuity and monthly pensions. Hence, so many uncertainties come with retirement and this could lead to poor health.

Hypertension is a condition when blood pressure is persistently high with a capacity to affect major organs of the body including brain, kidneys, heart and blood vessels among others. Blood pressure is the force exerted by circulating blood against the walls of the body's arteries, which are the major blood vessels in the body.⁶ Blood pressure is written as two numbers- systolic and

diastolic blood pressure. Systolic blood pressure represents the pressure in blood vessels when the heart contracts or beats. Diastolic blood pressure represents the pressure in the vessels when the heart rests between beats. Therefore, hypertension is diagnosed if when it is measured on two different days, the systolic blood pressure readings on both days are greater than or equal to 140mmHg and/or the diastolic blood pressure is greater than or equal to 90mmHg. There are modifiable and non-modifiable risk factors for having hypertension. The non-modifiable risk factors include a family history of hypertension, male gender, age of over 55 years and co-existing diseases such as diabetes, or kidney disease and black race.

According to Bedane (2016), the proportion of the global burden of disease attributable to hypertension has significantly increased from about 4.5% in 2000 to 7% in 2010.⁷ This makes hypertension the single most important cause of morbidity and mortality globally⁸. Furthermore, it was reported that in 2000, there were an estimated 972 million people with hypertension, 65% of who lived in the developing world with the number predicted to grow to 1.5 billion by the year 2025.⁷

The prevalence of hypertension varies based on the status of the location, being higher in urban centres than rural centres.^{8,9} The average prevalence of hypertension in Nigeria is 28-40% and this continues to rise due to the persistence of risks for cardiovascular disease which include increasing age, physical inactivity, diet, obesity, male gender among others.⁹ The prevalence of hypertension in a cross-sectional review among workers in a south western university was found to be 40.8%.¹⁰

Some studies have focussed on the role of health shocks in retirement decision. For instance, Milligan and Coile studied the effect of aging and health shocks on retirees in the United States. Using data from Health and Retirement Study (HRS), they found that households decrease their ownership of most asset classes as they age. While death of a spouse is a strong predictor of selling principal residence and health shocks affect asset holdings negatively.¹¹ Evidence also shows that out-of-pocket expenditures of hypertensive patients and their households were very high when compared with the mean monthly household income.⁷ Kokot investigated on the effect of a spouse's health shock on own risk attitudes. They found out that the indisposition of the spouse could disrupt the ability and efficiency in sharing everyday responsibilities. This could increase mental and financial pressure and would lead to the reduction of own risk.¹² In the same vein, Houtven and Coe studied the marginal impact of current wealth, forward-looking financial incentives and health shocks on married individual's retirement decision. They found out that financial incentives are the most important determinant of retirement behaviour. Also, that a husband is about half as responsive to his wife's financial incentives as he is to his own. Their study also revealed that married men are responsive to their wives' health shocks while wives' decisions concerning work are largely unaffected by their husband's health shocks.¹³

Furthermore, Schwandt studied the effect of wealth shocks on retiree's health, mental health and mortality¹⁴. Using data from the health and retirement study he found that a 10% wealth increase leads to an improvement of 1.5% to 3% of a standard deviation in physical, mental health measures and mortality. They found the most pronounced effects for the high blood

pressure. His study revealed that wealth shocks strongly affect retiree's health in the US through psychological factors. Behncke found out that retirement significantly increases the risk of being diagnosed with a chronic condition especially retirees are at risk of developing a cardiovascular disease².

Ademe *et al.* (2019) investigated on the hypertension self-care practice and associated factors among 309 patients in a public hospital in Dessie, Ethiopia.¹⁵ They found that social support was positively correlated with hypertension self-care practice and self-care agency was negatively correlated with hypertension self-care practice. Their study revealed that marital status, literacy level, poor source of self-care information, lack of exercise, lack of social support and lack of self-care agency could be the reason for the poor hypertension self-care practice.¹⁵ Feng *et al* in a study in China found that the socioeconomic factors did not really affect the control of hypertension in China. They concluded that if health insurance and health financing are properly implemented, it could bring about early detection and control of hypertension in China.¹⁶

Evidence shows that where they compared the quality of life of hypertensive patients with non-hypertensive subjects in Lebanon.^{17,18} Questionnaires were administered to 224 hypertensive subjects and 448 non-hypertensive subjects. Their study revealed that the quality of life for hypertensive patients was low compared to non-hypertensive subjects.¹⁸ Furthermore, Legido-Quigley *et al.* (2019) conducted a qualitative study using sixty semi-structured interviews for 20 participants from each of the countries namely; Bangladesh, Sri Lanka and Pakistan. They identified the health system and population barriers to accessing medical care for hypertensive subjects in

rural areas of each of the countries. They employed the grounded theory to analyse the data from the interviews. They found out that most of the patients reported low knowledge on how to prevent or treat hypertension. Also, inadequate services, poor quality of existing facilities, shortage of medicine supplies, busyness of doctors as a result of high patient load, long distance to the hospital and long time in waiting before seeing a doctor were identified as the main barriers to accessing quality

The methods of coping with medical expenditure among hypertensive retirees with an income shortfall and whether this affect their regular hospital visit or health needs related to their regularity of their pension benefits needs to be explored. There are limited data on the coping strategies of retirees to health expenses in this environment. Hence, this study focuses on the retirees and their coping strategies to health financing because they are at increased risk for multiplicity of cardiovascular risk factors including hypertension with increased health care spending.¹⁹ Therefore, this study seeks to bridge this gap in the literature by examining the effect of income reduction on the health status of retired hypertensive subjects in Southwest, Nigeria.

Methods

The study was a cross sectional study done at three cardiology clinics in Oyo & Osun State namely: LAUTECH Teaching Hospital, Ogbomoso, Oyo State, Goshen Heart Clinic, Osogbo and UNIOSUN Teaching Hospital, Osogbo, Osun State Nigeria. A pre-tested questionnaire to capture the socio-demographic indices and responses of participants was administered to document their coping strategies to income shock. The validity and consistency of the questionnaire was ensured by ensuring it was coordinated

by the same set of people across board who were well trained research assistants and validated by the lead author for every participant.

Recruitment of participants was done by block randomization technique. The respondents were randomly selected from three cardiology clinics in both Oyo and Osun States between January and October 2019. At the end of the administering the questionnaires, 200 retired hypertensive subjects were randomly selected but 190 retired hypertensive subjects responded and returned the questionnaires. Also, for the control subjects, 70 were randomly selected but 57 controls responded and returned the questionnaires. In total, 247 respondents were interviewed. Informed consent was obtained from all participants.

Participants were included if they fulfil the inclusion criteria. He/she must have been attending the cardiology clinic in any of these hospitals for at least three months and must have been compliant with hospital visit. He/she must have retired from active work such as civil service, artisans, skilled and unskilled professionals and must be willing to give information about his/her coping mechanisms with health financing as it concerns the management of hypertension. Participants were excluded if they were not willing to participate, had other comorbid illnesses such as kidney failure, heart failure, cancer or mental illness or they were still involved in civil service and obtaining regular monthly payment from an establishment or government parastatal. Data obtained include age, gender, occupation, years since diagnosed hypertensive, positive family history of hypertension and diabetes among others. Information on whether they have been paid their gratuities, whether they are obtaining regular monthly pensions and its regularity and their coping mechanism which

include who pays for their medical bills among others are also obtained. Data analysis was done using the Statistical Package for Social Sciences SPSS 23.0. Categorical data were summarized as frequencies and percentages while numerical data were summarized as means ± standard deviation. P<0.05 was taken as statistically significant.

The study adapted the framework of permanent income hypothesis (PIH). The PIH asserted that health consumption is linked to permanent income of individual agents. In PIH model, consumption smoothing is the sum of consumption expenditure of individual on food, durable, non-durable and health services. In that case, health consumption (C^H) can be maximized using a utility function of pensioner's income (y) as specified below;

$$C_{i,k}^H = \sum_{i \in k} \beta y_{i,k} \dots \dots \dots (1)$$

Where i = individual range, 1....., N and K = is location which is rural and urban. It ranges between 1 to 2. $C_{i,k}^H$ is the total health consumption of retiree i in location k . β is the fraction of pension income spent on health consumption. The pensioner's income comprises of

$$y_{i,t} = A_0 + Y_{my,t} \dots \dots \dots (2)$$

Equation (2) states that pensioner's income comprises of his asset during the working year (A_0) and monthly pension received from the government ($Y_{my,t}$). The budget constraint facing the pensioner can be specified as

$$y_{i,t} \leq E_h \dots \dots \dots (3)$$

Equation (3) states that expenditure on health services cannot be higher than pensioner's income. Therefore equation (1)

is maximized subject to budget constraint in equation (3).

In the theoretical and empirical literature, access to health services (Health Consumption) by pensioner which is proxied by health status (H_s) is a function of pensioner's income and other subjective determinants which can be written as;

$$\text{Health Status } (H_s) = f(y_{i,t}, Z) \dots \dots \dots (4)$$

Z denotes specific characteristics of individual pensioner that may influence access to health services on treatment of hypertension. Thus, equation (4) is specified to reflect the socio-economic characteristics of the respondents. The empirical model is specified in eqn (5)

$$\log H_s = \alpha_0 + \beta_1 y_t + \beta_2 \text{age}_{i,j} + \beta_3 \text{educ}_{i,j} + \beta_4 \text{mstat}_{i,j} + \beta_5 \text{fsize}_{i,j} + \beta_6 \text{spoc}_{i,j} + \varepsilon_{it} \dots (5)$$

Where age is age of the pensioners, education of the pensioners, mstat is marital status of the pensioners, fsize is the family size, spoc is the occupation of the spouse. Statistical analysis was done using the Statistical Package for Social Sciences SPSS Chicago III. USA Version 23.0. P value <0.05 was taken as statistically significant.

Results

Socio-demographic characteristics

The study participants included more males (59.1%) than females (40.9%). Almost three quarter (74.5%) of participants had at least tertiary education showing a high literacy level in the south west Nigeria. Most of the retirees (60.7%) were still on the old pension non-contributory scheme while only 22.7% were on the new contributory pension scheme (Table 1). As to whether they have received their gratuities in full as of the time of interrogation, 56.3% of the respondents claimed they have not received their pension

since retirement while 43.7% claimed they have received theirs. More worrisome is the fact that they have not been paid for many years. Out of the 56.3%, about 40% of them have not received their gratuity for more than 4 years since they retired. A few others had not been paid even up to 10 years and above after their retirement.

Irregularities in payment of pension among study participants are as shown in Table 2. Most of the study respondents (87.4%) were not receiving regular pension. Only 12.6%

were said to have been receiving regular pension.

Table 2 also presents how the retirees have been coping with their medical expenses in the face of their dwindling income consequent upon irregular pension payment and withheld gratuities. It was reported that the largest support for health care financing for the study participants were from their children as 45.3% of the respondents receive support from their children.

Table 1: socio-economic and demographic characteristics of respondents.

Variables	n (%)
Gender	
Male	146 (59.1)
Female	101 (40.9)
Age group	
<60	47 (19.0)
60-69	93 (37.7)
70-79	87 (35.2)
≥80	20(8.1)
Level of education	
No formal education	20(8.1)
School certificate/ O' level	43 (17.4)
OND/NCE/Diploma	74 (30.0)
BSc/HND	92 (37.2)
Postgraduate	18 (7.3)
Pension type	
None	41(16.6)
Old Pension Scheme	150 (60.7)
Contributory Pension Scheme	56 (22.7)
Gratuities paid	
No	139 (56.3)
Yes	108 (43.7)

Only 6.9% of them relied majorly on their pension benefits for their medical expenses while others received support from family and friends (4.5%) and non-pension benefits (4.5%). A sizable portion

(39.6%) indicated receiving support from other sources which include extended families, religious organizations, charity support etc.

Table 2: Irregularities in payments and coping strategies among the respondents.

Variables	n (%)
Irregularities in payment of monthly pension	
No extent/None at all	96(38.9)
Little extent	51(20.6)
Some extent	69 (27.9)
Great extent	31 (12.6)
Main coping strategies for medical expenses	
Personal pension benefits	15 (6.9)
Non-pension benefits	11 (4.5)
Family and friends	11 (4.5)
Children	112 (45.3)
Others	98 (39.6)

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In Table 3, the chi-square from the Omnibus tests model coefficient is 27.303. The Nagelkerke R Square is 76.5% as shown in Table 4. The Hosmer Lemeshow Test is not significant because the p-value is 0.839

which also implied that the model is fit as shown in Table 5. The result from the regression according to our mode is specified as;

$$\text{Log } H_s = 8.143 + 1.831y - 4.878\text{age} + 1.26\text{educ} - 0.978\text{mstat} - 0.91\text{fsize} + \text{et}$$

Table 3: Omnibus tests of Model Coefficients

	Chi square	Df	P value
Step 1 Step	27.303	13	0.011
Block	27.303	13	0.011
Model	27.303	13	0.011

The logistic regression is presented in Table 6. Health status is the dependent variable proxied by how chronically ill a member of the respondents’ family is. Age is an explanatory variable and it has a negative relationship with the health

status of the retirees. The coefficient is significant with p-value of 0.009. The odds ratio is 0.008. This implies that a 1% increase in age will bring about 0.008 decrease in the health status.

Table 4: Model Summary

Step	-2 Log likelihood	Cox & Snell R square	Nagelkerke R square
1	25.400 ^a	0.570	0.765

a. Estimation terminated at iteration number 8 because parameter estimates changed by less than .001.

Table 5: Hosmer and Lemeshow test

Step	Chi square	Df	Sig
1	4.199	8	0.839

Table 6: Regression analysis for variables in the equation

Variables	B	S. E	Wald	Sig	95% CI for EXP (B)	
					Lower	Upper
Age	-4.88	2.82	2.99	0.00*	.000	1.91
Education	1.26	0.79	2.55	0.03*	0.75	16.56
Marital status	-0.98	1.06	0.86	0.35	0.05	2.99
Household size	-0.09	1.26	0.01	0.94	0.08	10.71
Spouse occupation	1.18	2.02	0.34	0.04*	0.06	170.32
SP AV	2.31	1.43	2.60	0.01*	0.01	1.64
MONT PEN	1.83	0.97	3.58	0.02*	0.02	1.06
Constant	8.14	3.27	9.99	0.00		

*- Statistically significant with *p* value <0.05, C.I -Confidence interval

Discussion

This study revealed a major and significant shortfall in income among retirees in south west Nigeria with significant impact on health care funding and medical expenses. It must be noted that many medical illnesses including hypertension, diabetes mellitus etc. are highly prevalent during the retirement age and medical expenditure is one of the priorities of adult retired life. This implied that most of the retirees were experiencing shortfall or reduction in the flow of their income. This had implication on the management of their health. This is because some of them mentioned that as a result of the shortfall in their income they have had to miss their clinical appointments. Also, many of them could not afford the medical bills in the hospital since it is mostly out-of-pocket cost. Despite the fact that many of them had heard about the National Health Insurance Scheme (NHIS) yet most of them have not enrolled in the scheme. More than 50% of the respondents have not enrolled in the

NHIS this also made accessing quality medical care difficult among the retired hypertensive subjects. This report is similar to what has been reported from other population.^{7,12}

This study also revealed that children provided major support for health care financing for most of our adult retired hypertensive subjects. That is why the negative effect of the reduction in their income was not so pronounced. This follows the old age hypothesis. According to Akintunde, Olomola and Oladeji, the old age hypothesis is a situation where children were seen as a form of social and economic security to their parents even in old age. This is a common trend in most of the sub-Saharan African Countries and Nigeria is not left out.²⁰

The provision of medical expenditure by health insurance agencies such as the National Health Insurance Scheme to only

6.9% of study participants in this study lend credence to the fact that health insurance and income shortfall associated with poor pension management in Nigeria is a cause for concern as it may lead to increased morbidity and mortality of chronic diseases such as hypertension and diabetes that often requires lifelong management, drug use which must be uninterrupted. The lack of stability of health care financing provides gaps for deterioration during the time of scarcity which is often difficult to regain or reverse even when finance become available. This accounts for why many of them presents very late to hospitals in critical states with advanced irreversible damage to major organs and eventually poor prognosis. The regression equation done in this study confirms the earlier submission that age is a significant factor in determining people's health. As one increases in age health begins to deteriorate. This conforms to the earlier study by Cushieri *et al* (2017).¹⁷ there should be a social support from the government to the retirees and that their pension should paid regularly. The retirees should also benefit from the National Health Insurance Scheme.

However, this is in contrast with the study by Ademe *et.al* (2019).¹⁵ This study also revealed that education has a positive and significant relationship with health status. Education improves health and the odds ratio was 3.526. That means, a 1% increase in degree of education will bring about 3.526 increase in the health status of the retirees. This is consistent with study from Ademe *et.al*(2019)¹⁵ but in contrast to the study by Cushieri *et al* (2017).¹⁷ This study did not demonstrate any significant association between marital status and health status. Household size also had a negative but not significant relationship with the health status in this study. Large

household size could have a negative effect on the health status of the retirees. This conforms to the opinion of Feng *et.al* that large household size also increases the burden of hypertension in such household.¹⁶ The spouse's occupation was also shown to have a positive and significant relationship with health status. The odds ratio was 3.261. This implies that for a 1% increase in the occupation of the spouse there will be about 3.261 improvement in the health status of the retirees. This study also showed a positive and significant relationship between the spouse average income and health status with a 1% increase in the average income of the spouse bringing about 0.99 increase in the health status of the retirees. This is in support of the findings by Houtven and Coe¹³ that the financial status of the spouse improves significantly the health status. There was also a positive and significant relationship between the monthly pension and the health status of the retirees. A 1% increase in the monthly pension will bring about 0.16 increase in the health status of the retirees. The outcome of this study suggests that hypertensive subjects who are retired may have poorer quality of life based on their reduced ability to cope with medical expenditures at a time they are more predisposed to multiple risk factors. This agrees with the assertion by Khalifeh *et al.* that hypertensive may have poorer quality of life compared to others based on many reasons.¹⁸

Conclusion

This study showed that pension payment and gratuities settlement are very irregular among retirees in south west Nigeria. Majority of retirees derived support from heath financing majorly from children. It also revealed that increasing age, marital status and large household size had negative relationship with health of retirees

while education, spouse average income, spouse occupation and monthly pension had positive relationship with retirees' health status. We recommend that there should be a social support from the government to retirees and that their pensions should be paid regularly and promptly. The retirees should also benefit from the National Health Insurance Scheme to reduce their dependence on others which may not be forthcoming when it is expeditiously needed.

Authors Contributions

ATS: study concept, design, data collection, statistical analysis, manuscript writing and final approval of manuscript.
OTO: study concept and design, statistical analysis and final approval of manuscript.
AAA: study concept and design, data collection. Data analysis, review of manuscript and final approval of manuscript.

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