ANALYSIS OF HOUSEHOLD CONSUMPTION, HEALTH FINANCING, AND LIFE EXPECTANCY IN NIGERIA: EVIDENCE FROM AN ARDL BOUNDS TESTING APPROACH

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Abstract

The study investigates how household welfare and health-related expenditures influence longevity outcomes within the context of macroeconomic conditions in Nigeria. Annual time series data covering the period 1990–2025 were employed. The Autoregressive Distributed Lag (ARDL) bounds testing approach was applied to estimate both the short-run and long-run dynamics among the variables. The results reveal the existence of a long-run relationship among the variables. Household consumption expenditure has a positive and statistically significant impact on life expectancy in the long run, although its short-run effect is insignificant. Government health expenditure, household income, and health infrastructure show positive and significant effects on life expectancy in both the short run and long run. Out-of-pocket health expenditure and poverty rate exhibit positive but statistically insignificant effects, suggesting limitations in the effectiveness of private health financing and welfare improvement mechanisms in translating into better longevity outcomes. Inflation negatively affects life expectancy in the short run, while its long-run effect is weakly positive, reflecting the complex relationship between macroeconomic conditions and health outcomes. The error correction term is negative and statistically significant, confirming the existence of a stable long-run equilibrium relationship among the variables. The estimated adjustment coefficient indicates that approximately 47.9 percent of short-run deviations from the long-run equilibrium are corrected within one year, implying a moderate speed of adjustment towards equilibrium following economic or health financing shocks. The study concludes that household welfare, effective health financing, and improved healthcare infrastructure are important determinants of life expectancy in Nigeria.

Keywords: Household consumption, Health financing, Life expectancy, ARDL model, Nigeria.

1. Introduction

Life expectancy is widely regarded as a key indicator of a country's health status and overall socioeconomic development, reflecting the combined effects of healthcare access, living standards, education, nutrition, and broader economic conditions. The World Health Organization (2025) emphasizes that variations in life expectancy are strongly shaped by social and economic factors such as income, education, and access to basic services. In developing economies, improvements in life expectancy are typically associated with rising incomes, better living conditions, and increased investment in health systems. Despite some progress, Nigeria continues to record relatively low life expectancy compared to many emerging economies, largely due to persistent poverty, weak healthcare infrastructure, and limited access to quality healthcare services (World Bank, 2023; United Nations Development Programme, 2024).

Household consumption expenditure provides an important channel through which economic conditions translate into health outcomes. Higher levels of consumption are generally associated with improved nutrition, better housing, and increased access to healthcare services, all of which contribute to longer life expectancy. This relationship is grounded in the health demand theory proposed by Grossman (1972), which conceptualizes health as a form of capital that individuals can improve through investment in healthcare and other welfare-enhancing goods. In contexts where public healthcare provision is limited, household consumption decisions become critical in determining access to and utilization of healthcare services. Consequently, higher income and consumption levels are often linked to better health outcomes, while financial constraints restrict access to essential care.

The structure of healthcare financing further conditions this relationship. In Nigeria and many low- and middle-income countries, healthcare systems rely heavily on out-of-pocket payments, placing a significant financial burden on households. The World Health Organization (2024) notes that high reliance on out-of-pocket spending contributes to financial hardship and inequalities in healthcare access. While increased household consumption may enhance health outcomes through higher spending on medical care and nutrition, dependence on private health financing can widen disparities in access to quality healthcare services.

In addition to household consumption, several socioeconomic and macroeconomic factors influence life expectancy. Income, education, government health expenditure, and macroeconomic stability shape both household capacity to invest in health and the effectiveness of health systems. Higher income improves access to healthcare and supports healthier lifestyles, while education enhances health awareness and preventive behavior. Increased public health expenditure strengthens healthcare infrastructure and service delivery, whereas macroeconomic instability, particularly inflation, reduces purchasing power and limits access to essential services. The World Health Organization (2025) highlights that inequalities in income and social conditions remain major drivers of disparities in health outcomes and longevity.

Despite extensive research on the determinants of health outcomes, limited attention has been given to the specific role of household consumption expenditure in shaping life expectancy in Nigeria. Existing studies largely focus on aggregate health spending or macroeconomic indicators, with less emphasis on household-level welfare dynamics. However, growing evidence suggests that household conditions, including income and consumption capacity, are central to understanding how economic factors influence health outcomes. This underscores the need for empirical analysis that integrates household consumption behavior with broader health financing structures.

Against this background, this study examines the impact of household consumption expenditure on life expectancy in Nigeria, while controlling for key health financing and macroeconomic variables. Using annual time series data and the Autoregressive Distributed Lag (ARDL) framework, the study explores both short-run and long-run relationships between household welfare, health financing, and longevity. The findings are expected to contribute to the health economics literature and provide policy-relevant insights for improving health outcomes and living standards in Nigeria.

2. Literature Review

2.1 Conceptual Clarifications

2.1.1 Household Consumption Expenditure

Household consumption expenditure refers to the total value of goods and services consumed by households over a given period and is widely used as an indicator of household welfare and living standards. It reflects purchasing power, access to essential goods, and overall economic well-being (Deaton, 2018). Consumption typically includes spending on necessities such as food, housing, and healthcare, as well as discretionary items like education and recreation. Households with higher consumption levels are more likely to invest in preventive care, timely treatment, and improved living environments, which contribute to better health outcomes and longer life expectancy. Conversely, low consumption levels are associated with deprivation, undernutrition, and limited access to healthcare, particularly in developing economies (Grossman, 1972; Attanasio & Weber, 2010).

2.1.2 Health Financing

Health financing refers to the processes through which resources are mobilized, pooled, and allocated for the provision of healthcare services to achieve equitable access, quality care, and financial risk protection (World Health Organization, 2021). It comprises public financing through government revenues and social health insurance, private financing through out-of-pocket payments and private insurance, and external funding from donors and international organizations, each with significant implications for health equity, efficiency, and population health outcomes (World Bank, 2022; Wagstaff et al., 2018). Effective health financing mechanisms can reduce financial barriers, enhance the utilization of preventive and curative services, and improve life expectancy, whereas inefficient systems dominated by direct household payments may result in delayed care, underutilization of health services, and increased vulnerability to catastrophic health expenditures, especially among low-income populations (Dieleman et al., 2021; James, Devaux & Sassi, 2018). Therefore, efficient health financing serves as a critical complement to household welfare by ensuring that healthcare services are affordable, accessible, and of sufficient quality to improve population health outcomes (Jakovljevic et al., 2020; Ranabhat et al., 2020).

2.1.3 Life Expectancy

Life expectancy is a fundamental demographic and health indicator that represents the average number of years an individual is expected to live from birth under prevailing mortality conditions. It provides a comprehensive measure of population health by capturing the combined effects of socioeconomic conditions, environmental factors, disease burden, nutrition, living standards, and access to healthcare services (World Health Organization, 2022; Bloom & Canning, 2008; Amiri & Ventelou, 2021). Health financing systems also play a crucial role in determining longevity outcomes, as adequate government health expenditure, effective insurance coverage, and reduced dependence on out-of-pocket payments enhance access to quality healthcare and improve population health (Dieleman et al., 2021; Ranabhat et al., 2020).

2.2 Theoretical Review

The relationship between household consumption expenditure, health financing, and life expectancy is grounded in several economic theories that explain how resources allocated to

health influence individual well-being and population longevity. The theoretical foundation of this study draws primarily from the Health Capital Theory, Human Capital Theory, and Health Production Function Theory, which collectively explain the mechanisms through which economic resources, healthcare investment, and health services contribute to improved health outcomes.

The health capital theory, developed by Grossman (1972), provides one of the most influential frameworks for understanding the demand for healthcare and its relationship with longevity. The theory views health as a form of capital stock that generates utility by increasing healthy time available for consumption and productive activities. Individuals invest in health through medical care, nutrition, education, and healthy behaviours because improvements in health capital reduce morbidity and increase life expectancy. Furthermore, human capital theory according to Becker (1964), emphasized the role of investment in education, health, and skills as determinants of economic productivity and welfare. The theory considers health as a critical component of human capital because healthier individuals are more productive, have greater economic opportunities, and experience improved quality of life. Public investment in healthcare and household expenditure on health-enhancing goods contribute to human capital accumulation by reducing disease burden and improving life expectancy.

The health production function theory proposed by Grossman (1972) argued that health outcomes as the result of a combination of health inputs, socioeconomic factors, and environmental conditions. The theory suggests that health status, including life expectancy, is produced through the interaction of healthcare services, household income, education, nutrition, environmental quality, and public health interventions. The healthcare utilization model (Andersen, 1995) provides relevant insights by explaining how individuals' use of healthcare services is influenced by predisposing factors, enabling resources, and perceived health needs. According to the model, income and financial capacity are important enabling factors that determine whether individuals can access healthcare services. Health financing mechanisms such as insurance coverage and government healthcare provision can reduce financial barriers and increase healthcare utilization, thereby contributing to improved health outcomes. This perspective is particularly relevant to Nigeria, where high dependence on out-of-pocket expenditure remains a major barrier to healthcare access. These theories establish that life expectancy is not determined solely by medical interventions but emerges from the interaction between household economic capacity, healthcare financing systems, and broader socioeconomic conditions.

2.3 Empirical Review

Empirical studies have increasingly examined the relationship between household welfare, health financing, and health outcomes, emphasizing the role of economic resources and healthcare investment in improving population longevity. Existing evidence suggests that household consumption expenditure influences health outcomes by improving access to essential health inputs such as nutrition, preventive care, and medical services, particularly in developing countries where households often finance a significant proportion of healthcare costs. Bai and Zhao (2020) found that higher household consumption expenditure significantly improved health outcomes across developing countries by enhancing households' ability to access quality nutrition and healthcare services. Similarly, Barlow, McKee and Basu (2021) and Adewole et al.

(2021) demonstrated that improved household socioeconomic status was associated with better healthcare utilization and improved maternal and child health outcomes. These findings indicate that household welfare represents an important pathway through which economic resources influence population health.

Beyond household welfare, a substantial body of literature has examined the influence of health financing mechanisms on health outcomes and longevity. Studies have consistently shown that effective health financing systems, particularly those supported by adequate public expenditure and risk-pooling mechanisms, contribute to improved health outcomes. Dieleman et al. (2021), Wagstaff et al. (2018), and Jakovljevic et al. (2020) reported that increased public health expenditure and expanded insurance coverage positively affect life expectancy by reducing financial barriers to healthcare access. Conversely, excessive dependence on out-of-pocket expenditure increases financial vulnerability, limits healthcare utilization, and weakens improvements in health outcomes. These studies highlight the importance of sustainable health financing structures in achieving better population health.

Ranabhat et al. (2020), Khan et al. (2020), and Rahman et al. (2019) found that improvements in income levels, education attainment, and health investment significantly increase life expectancy. Amiri and Ventelou (2021) further established that public health expenditure has a stronger positive influence on longevity compared with private health spending, suggesting that government intervention remains essential in improving population health. Similarly, Li et al. (2020) showed that economic growth and public healthcare investment have long-run positive effects on life expectancy.

In the Nigerian context, Danlami et al. (2024) examined the relationship between health expenditures and economic growth using annual time-series data from 1990 to 2023. Employing the Autoregressive Distributed Lag (ARDL) framework, the study investigated the effects of different health financing components, including government health expenditure, private health expenditure, and out-of-pocket payments, on economic performance. The findings revealed a long-run relationship between health expenditure indicators and economic growth, with private health expenditure, out-of-pocket expenditure, healthcare budget allocation, and immunization interventions showing positive effects on economic growth, while some components of public health expenditure and macroeconomic instability had negative effects.

Sauer and Villar (2021) found that inflation and economic instability reduce household purchasing power and negatively affect healthcare utilization, particularly in economies where households rely heavily on direct payments for medical services. These findings are relevant to Nigeria, where rising healthcare costs, poverty, and limited insurance coverage continue to constrain access to healthcare services.

3. Methodology

3.1 Source of Data

The study uses annual data for both the dependent and explanatory variables. All data were sourced from the Central Bank of Nigeria (CBN) Statistical Bulletin (2025 edition), the National Bureau of Statistics (NBS), and the World Bank World Development Indicators (2025), covering

the period 1990 to 2025. This timeframe captures significant economic, social, and health policy developments that may influence household welfare and longevity outcomes.

3.2 Theoretical Framework

The theoretical foundation of this study draws primarily on Grossman health demand theory, which posits that health is both a consumption and an investment good (Grossman, 1972). According to this model, individuals derive utility from being healthy and invest in health through expenditures on medical care, nutrition, and other welfare-enhancing goods. Health is viewed as a form of human capital that can improve productivity, reduce morbidity, and extend longevity. In this context, household consumption expenditure represents an important mechanism through which households can invest in their health, affecting outcomes such as life expectancy. Higher consumption levels allow households to afford better nutrition, access healthcare services, and maintain living conditions conducive to good health. Complementing this framework, Health Financing Theory emphasizes the role of financial mechanisms in determining healthcare access and population health (World Health Organization, 2021).

By integrating these perspectives, this study conceptualizes life expectancy as a function of household consumption expenditure, health financing, and relevant socioeconomic variables. The framework posits that household welfare improves longevity both directly, through consumption-driven investments in health, and indirectly, by enabling households to better utilize health financing mechanisms. This combined theoretical approach provides a robust foundation for empirically investigating the short-run and long-run dynamics of household consumption, health financing, and life expectancy in Nigeria.

3.3 Model Specification

The model used in achieving the objective of the study is based on the Grossman Health Capital Theory (Grossman, 1972). This theory posits that health is a form of human capital in which individuals and households invest to improve their productivity and quality of life. Higher household consumption expenditure, particularly on health-promoting goods and services, education, and nutrition, enhances health status and, consequently, increases life expectancy.

The study adopts the study done by Awoyemi and Akinkugbe (2010). The function model by Awoyemi and Akinkugbe (2010) is as follows:

$$LEXPt = f(HCEXP, OOP, INC, GHS, EDU) \quad 3.1$$

The functional relationship can be transformed into a linear mathematical expression as:

$$LEXP_t = \beta0 + \beta1HCEXP_t + \beta2OOP_t + \beta3INCt + \beta4GHS_t + \beta5EDU_t + \varepsilon_t \quad 3.2$$

To achieve the objective of this study, the model is modified as follows:

$$LEXPt = \beta0 + \beta1HCEXPt + \beta2OOPt + \beta3INCt + \beta4GHSt + \beta5HIt + \beta6POVt + \beta7EDUt + \beta8INFLt + \varepsilon t \quad 3.3$$

The logarithmic form of the above model is specified to explain the results in terms of elasticities:

$$LLEXPt = \beta0 + \beta1LHCEXPt + \beta2LOOPt + \beta3LINCt + \beta4LGHSt + \beta5LHIt + \beta6LPOVt + \beta7LEDUt + \beta8LINFLt + \varepsilon t \quad 3.4$$

Where:
Life expectancy ($LLEXP_t$) is measured as life expectancy at birth in years, representing the average number of years a newborn is expected to live under current mortality conditions; Household consumption expenditure ($LHCEXP_t$) is measured as real household final consumption expenditure at constant prices, expressed in Naira or United States dollars; Out-of-pocket health expenditure ($LOOP_t$) is measured as direct payments made by households for healthcare services, either as a percentage of total health expenditure or in real monetary terms; Household income ($LINC_t$) is proxied by real GDP per capita or average household income at constant prices; Government health spending ($LGHS_t$) is measured as public expenditure on health, expressed either as a percentage of GDP or in real monetary terms; Health insurance coverage (LHI_t) is measured as the proportion of the population enrolled in health insurance schemes, such as the National Health Insurance Scheme; Poverty rate ($LPOV_t$) is measured as the percentage of the population living below the poverty line; Education level ($LEDU_t$) is proxied by indicators such as literacy rate, school enrollment rate, or average years of schooling; Inflation rate ($LINFL_t$) is measured as the annual percentage change in the consumer price index; The error term (ε_t) represents unobserved factors that influence life expectancy but are not explicitly included in the model. These may include environmental conditions, quality of healthcare services, and institutional factors.

4. Results and Discussion

4.1 Descriptive Statistics

Table 1: Descriptive Statistics Estimation

	LEXP	HEXP	OOP	HINC	GEXP	HI	POVR	EDU	INFL
Mean	0.303714	72.75400	66.45400	28.15286	210.1446	0.003463	80.82114	260.2937	18.57409
Median	0.320000	24.52000	67.34000	27.12000	82.80000	0.003900	88.50000	137.1200	13.01000
Maximum	0.570000	462.6300	90.01000	53.19000	923.7900	0.008300	98.90000	920.0200	72.84000
Minimum	0.010000	0.150000	35.67000	14.90000	0.290000	0.000300	40.10000	0.290000	5.388000
Std. Dev.	0.191005	103.1647	12.34329	10.68595	250.2207	0.001366	14.63519	294.8923	15.86299
Skewness	-0.300718	1.936455	-0.693240	0.555268	1.248960	0.303463	-1.117032	1.104456	2.102790
Kurtosis	1.771654	7.004877	3.112706	2.325659	3.596270	7.150202	3.466770	2.947519	6.583610
Jarque-Bera	2.727898	45.26444	2.821919	2.461704	9.617912	25.65578	7.596343	7.119647	44.52171
Probability	0.255649	0.000000	0.243909	0.292044	0.008156	0.000003	0.022412	0.028444	0.000000
Sum	10.63000	2546.390	2325.890	985.3500	7355.060	0.121200	2828.740	9110.280	650.0930
Sum Sq. Dev.	1.240417	361860.2	5180.136	3882.444	2128754.	6.35E-05	7282.420	2956689.	8555.575
Observations	35	35	35	35	35	35	35	35	35

Source: Author's Computation 2026 using E-views 9.0

The descriptive statistics result in Table 4.1 explains the variables in terms of their averages, standard deviation, minimum and maximum values. The analysis is based on 35 observations covering the period 1990 to 2025. Life expectancy has a mean value of 0.30, with a minimum of 0.01 and a maximum of 0.57. The standard deviation of 0.19 indicates low variability. The skewness of 0.30 shows slight left-skewness, while the kurtosis of 1.77 suggests a flatter distribution than normal. The Jarque-Bera probability of 0.2556 confirms normality. This indicates that life expectancy remained relatively stable over the period, with gradual improvements.

Household consumption expenditure averages 72.75, with a minimum of 0.15 and a maximum of 462.63, suggesting wide disparities. The standard deviation of 103.16 confirms extreme variability. The skewness of 1.94 indicates strong right-skewness, while a kurtosis of 7.00 points to extreme outliers. Out-of-pocket health expenditure has a mean value of 66.45, with values ranging between a minimum of 35.67 and a maximum of 90.01. The standard deviation of 12.34 indicates relatively low variability around the mean. The skewness value of 0.69 suggests a slight positive (right) skewness, while the kurtosis of 3.11 is close to that of a normal distribution.
Government health expenditure has a mean value of 210.14, with values ranging between a minimum of 0.29 and a maximum of 923.79. Health insurance coverage has an average value of 0.0035, with values ranging between a minimum of 0.0003 and a maximum of 0.0083. The standard deviation of 0.0014 indicates very low variability. Jarque-Bera probability of 0.0000 confirms that the data is not normally distributed. These results imply that health insurance coverage remains extremely low, with little variation over time, highlighting weak financial protection mechanisms for households.

The descriptive statistics reveal that variables such as OOP, LEXP, and HINC follow a near-normal distribution and are relatively stable, while HEXP, GEXP, HI, POVR, EDU, and INFL display strong deviations from normality, with high skewness, extreme kurtosis, and volatility. To address these issues, log transformation was applied before estimation, improving normality and stabilizing variance.

Table 2: Unit Root Test Results (ADF Statistics).

Variable	T-statictics		Critical value 5%		P-value		Integration Order	
	@Level	@1st Difference	Level	@1st Difference	@Level	@1st Difference	@Level	@1st Difference
LLEXP	-1.767524	-6.252569	-2.951125	-2.954021	0.3896	0.0000	-	I(1)
LHCEXP	-2.449638	-4.681123	-2.951125	-2.957110	0.1364	0.0007	-	I(1)
LOOP	-3.803316	-8.448099	-2.951125	-2.957110	0.0066	0.0000	I(0)	-
LHINC	-1.924007	-4.470121	-2.951125	-2.954021	0.3178	0.0012	-	I(1)
LGEXP	-1.883663	-6.405971	-2.951125	-2.954021	0.3357	0.0000	-	I(1)
LHI	-3.647390	-5.575363	-2.981038	-2.954021	0.0116	0.0001	I(0)	-
LPOVR	-2.377721	-6.977868	-2.951125	-2.957110	0.1553	0.0000	-	I(1)
LEDU	-1.238194	-5.116597	-2.951125	-2.954021	0.6463	0.0002	-	I(1)
LINFL	-2.349570	-4.735834	-2.951125	-2.957110	0.1632	0.0006	-	I(1)

Source: Author's Computation 2026 using E-views 9.0

The ADF unit root test results in Table 2, assess the stationarity of the variables using the Augmented Dickey-Fuller (ADF) test. The table provides the t-statistics, critical values at a 5% significance level (p-values) and the integration order for each variable. The results show that the absolute values of the t-statistics for all variables are greater than the critical value at a 5% significance level, and their corresponding p-values are all below 0.05. This indicates that the null hypothesis of a unit root (non-stationarity) is rejected for each variable at its respective levels of integration.

The integration order (I(d)) column reveals that most variables, including LLEXP, LHCEXP, LHINC, LGEXP, LPOVR, LEDU and LINFL, are integrated at order I(1), meaning they become stationary after first differencing. LOOP and LHI are Integrated at order I(0), meaning they were already stationary at their level form. The implications of these findings are crucial for econometric modeling. The presence of I(0) and I(1) implies a mixed stationarity among the variables, suggesting the possibility of long-run relationships among the variables, which justifies further analysis using ARDL test.

4.2.1 ARDL Bounds Cointegration Test.

Because the variables are of mixed order of integration as indicated by the ADF unit root test in Table 4.2, the study employed Auto Regressive Distributed Lag (ARDL), Bounds Cointegration test to test for the existence of a long-run relationship between the variables. The summary of the test result is presented in Table 3.

Table 3: Cointegration test: ARDL Bounds test.

Computed F-Statistic	5% Critical Value Bound		10% Critical Value Bound	
6.377888	Lower bound value	Upper bound value	Lower bound value	Upper bound value
	2.22	3.39	1.95	3.06

Source: Author's Computation 2026 using E-views 9.0

Table 3 presents the results of the ARDL Bounds test for cointegration, which determines whether there is a long-run relationship among the variables in the model. The computed F-statistic is 6.377888, which is compared with the critical value bounds at 5% and 10% significance levels, respectively. At 5% significance level, the lower bound is 2.22, and the upper bound is 3.39. Also, at a 10% significance level, the lower bound is 1.95, and the upper bound is 3.06. As observed from the table, the computed F-statistics are greater than the upper bound critical value at both the 5% and 10% confidence levels. Thus, since the computed F-statistic (6.377888) is higher than the upper bound at both 5% and 10% significance levels, it indicates the rejection of the null hypothesis of no cointegration. This means that there is a significant long-run relationship among the variables under consideration. Therefore, the results confirm that the variables in the model are cointegrated, suggesting that they move together in the long run.

4.2.2 Error Correction Results.

Table 4: Error Correction and Long Run Results.

Dependent Variable: LLEXP				
Cointegrating Form				
Variable	*Coefficient*	*Std. Error*	*t-Statistic*	*Prob.*
D(LHEXP)	*-0.031044*	*0.051285*	*-0.605323*	*0.5585*
D(LOOP)	*0.274858*	*0.333017*	*0.825357*	*0.4284*
D(LGEXP)	*0.319094*	*0.080310*	*3.973286*	*0.0026*
D(LHINC)	*1.365216*	*0.558389*	*2.444917*	*0.0346*
D(LHI)	*0.828972*	*0.174386*	*4.753650*	*0.0008*
D(LPOVR)	*0.233881*	*0.444724*	*0.525903*	*0.6104*
D(LEDU)	*-0.808671*	*0.185865*	*-4.350850*	*0.0014*
D(LINFL(-1))	*-0.715597*	*0.170285*	*-4.202353*	*0.0018*
CointEq(-1)	*-0.478594*	*0.129585*	*-3.693277*	*0.0042*
*Cointeq = LLEXP - (0.5535*LHEXP + 0.5743*LOOP + 1.5062*LGEXP +5.6921*LHINC + 1.8359*LHI + 3.2326*LPOVR -0.4873*LEDU + 1.1281*LINFL -14.9957)*				

Source: Author's Computation 2026 using E-views 9.0

The short-run results presented in Table 4 provide evidence on the immediate effects of household consumption, health financing, and other control variables on life expectancy in Nigeria. The significance and sign of the estimated coefficients indicate how temporary changes in these variables influence life expectancy before the system returns to its long-run equilibrium position. The error correction term, CointEq(-1), is negative and statistically significant at the 1 percent level, with a coefficient of -0.4786. The coefficient suggests that approximately 47.9 percent of any disequilibrium caused by shocks to household consumption, health financing, or other explanatory variables is corrected within one year.

In the short run, government health expenditure (D(LGEXP)) has a positive and statistically significant effect on life expectancy, with a coefficient of 0.3191 and a probability value of 0.0026. This indicates that increases in government spending on health contribute to immediate improvements in life expectancy. This finding supports the view that effective public financing of the health sector is essential for enhancing access to healthcare and improving longevity.
Household income (D(LHINC)), which represents the consumption capacity of households, also has a positive and statistically significant effect on life expectancy, with a coefficient of 1.3652 and a probability value of 0.0346. This suggests that improvements in household income led to better health outcomes in the short run. Higher income levels increase households' ability to consume health-enhancing goods and services, including quality food, healthcare services, medication, and improved living conditions. Similarly, health infrastructure (D(LHI)) has a positive and significant impact on life expectancy, with a coefficient of 0.8290 and a probability value of 0.0008.

However, health expenditure (D(LHEXP)) has a negative but statistically insignificant coefficient of -0.0310 with a probability value of 0.5585. This indicates that changes in health expenditure alone do not produce an immediate significant effect on life expectancy in the short run. Out-of-pocket health expenditure (D(LOOP)) has a positive but statistically insignificant

coefficient of 0.2749 with a probability value of 0.4284. Poverty (D(LPOVR)) also has a positive but statistically insignificant coefficient of 0.2339 with a probability value of 0.6104. The result suggests that short-term changes in poverty levels do not significantly influence life expectancy within the model.

Lagged inflation (D(LINFL(-1))) has a negative and statistically significant effect on life expectancy, with a coefficient of -0.7156 and a probability value of 0.0018. This indicates that rising inflation adversely affects life expectancy in the short run. Inflation reduces household purchasing power and weakens consumption capacity, making it more difficult for households to afford quality healthcare, nutritious food, and other health-related goods and services.

Table 5: Long Run Results.

Long Run Coefficients				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
LHEXP	0.553531	0.162434	3.407728	0.0067
LOOP	0.574303	0.740991	0.775048	0.4562
LGEXP	1.506180	0.557024	2.703979	0.0222
LHINC	5.692082	2.007126	2.835937	0.0177
LHI	1.835941	0.559652	3.280505	0.0083
LPOVR	3.232635	2.379895	1.358310	0.2042
LEDU	-0.487280	0.470984	-1.034600	0.3252
LINFL	1.128138	0.554350	2.035066	0.0692
C	-14.995734	8.135417	-1.843266	0.0951

Source: Author's Computation 2026

Long-Run Results

The long-run coefficients presented in Table 4.10 provide evidence on the sustained relationship between household consumption capacity, health financing, and life expectancy in Nigeria. Unlike the short-run estimates, which capture immediate adjustments, the long-run coefficients explain how persistent changes in the explanatory variables influence life expectancy after the system has returned to equilibrium. The results indicate that household economic conditions, health financing components, and healthcare-related factors play important roles in determining long-term improvements in life expectancy.

Health expenditure (LHEXP) has a positive and statistically significant long-run effect on life expectancy, with a coefficient of 0.5535 and a probability value of 0.0067. This implies that a 1 percent increase in health expenditure is associated with approximately a 0.55 percent increase in life expectancy in the long run. Out-of-pocket health expenditure (LOOP) has a positive but statistically insignificant coefficient of 0.5743 with a probability value of 0.4562. Government health expenditure (LGEXP) has a positive and statistically significant long-run effect on life expectancy, with a coefficient of 1.5062 and a probability value of 0.0222. This indicates that a 1 percent increase in government health expenditure leads to approximately a 1.51 percent improvement in life expectancy in the long run. This finding supports studies such as Dieleman et al. (2021), Wagstaff et al. (2018), Jakovljevic et al. (2020), and Amiri and Ventelou (2021), which established that effective public health financing contributes significantly to better health outcomes. It also complements Danlami et al. (2024), who found that health financing components influence economic performance in Nigeria.

Household income (LHINC), which represents household consumption capacity, has the largest positive and statistically significant effect among the explanatory variables, with a coefficient of 5.6921 and a probability value of 0.0177. This suggests that a 1 percent increase in household income increases life expectancy by approximately 5.69 percent in the long run. This finding supports Bai and Zhao (2020), Barlow, McKee and Basu (2021), and Adewole et al. (2021), who emphasized that improved socioeconomic conditions enhance healthcare utilization and population health outcomes.

Health infrastructure (LHI) also has a positive and statistically significant long-run effect on life expectancy, with a coefficient of 1.8359 and a probability value of 0.0083. This indicates that improvements in healthcare infrastructure contribute substantially to long-term improvements in population longevity. This supports Li et al. (2020), who found that healthcare investment and economic development have positive long-run effects on life expectancy.

Poverty (LPOVR) has a positive but statistically insignificant coefficient of 3.2326 with a probability value of 0.2042. The positive sign is contrary to theoretical expectations, as higher poverty levels are generally associated with poorer health outcomes due to reduced access to healthcare, inadequate nutrition, and poor living conditions. Education (LEDU) has a negative and statistically insignificant coefficient of -0.4873 with a probability value of 0.3252. The result differs from findings by Ranabhat et al. (2020), Khan et al. (2020), and Rahman et al. (2019), who reported positive effects of education on life expectancy. Inflation (LINFL) has a positive and marginally significant long-run coefficient of 1.1281 with a probability value of 0.0692. This finding differs from Sauer and Villar (2021), who found that inflation and economic instability negatively affect healthcare utilization.

Overall, the long-run results demonstrate that household consumption capacity, health financing, and healthcare infrastructure are important determinants of life expectancy in Nigeria. The findings show that government health expenditure, general health expenditure, household income, and health infrastructure significantly improve life expectancy over time. These results support existing empirical evidence on the importance of economic resources and effective health financing in improving population health.

5. Conclusion and Recommendations

5.1 Conclusion

This study examined the impact of household consumption expenditure on life expectancy in Nigeria, while accounting for the role of health financing and key macroeconomic variables. Using annual time series data from 1990 to 2024 and the Autoregressive Distributed Lag (ARDL) framework, the analysis provided evidence on both the short-run adjustments and long-run equilibrium relationships between household welfare and health outcomes. The findings reveal that household consumption expenditure exerts a significant positive effect on life expectancy in the long run. This suggests that sustained improvements in household welfare enhance access to essential health-related needs such as nutrition, healthcare services, and improved living conditions, all of which contribute to increased longevity. In addition, health financing mechanisms, particularly government health expenditure, were found to have a strong positive and significant impact on life expectancy. This underscores the importance of public

investment in healthcare in expanding access, improving service delivery, and strengthening the overall health system. However, out-of-pocket health expenditure showed no significant long-run effect, indicating that reliance on private health payments may not be an effective or sustainable pathway for improving population health outcomes.

5.2 Recommendations

Based on the findings the study recommends the following. The need to strengthen household economic capacity by promoting policies that support income growth and reduce economic vulnerability. Expanding social protection programs, such as conditional cash transfers and targeted subsidies, can also help improve household access to essential goods and services, particularly healthcare and nutrition. The government health expenditure should be increased and efficiently managed. Strengthening primary healthcare systems, expanding preventive care, and improving access to essential medical services should remain central to public health strategies.

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