Impact of Health Financing on Life Expectancy in Nigeria

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ABSTRACT

Life expectancy remained one of the most important indicators of population well-being and human development, yet Nigeria continued to record relatively low longevity outcomes compared to other developing nations. Against this problem, the paper examined the impact of health financing on life expectancy in Nigeria. Specifically, the paper investigated the impact of government capital health spending, government recurrent health spending, and external health expenditure on life expectancy. The paper adopted an ex-post facto research design and employed the Fully Modified Ordinary Least Squares (FMOLS) technique using a semi-log model specification to estimate the long-run relationships between health financing and life expectancy. The findings showed that government capital health spending had a positive but statistically insignificant relationship with life expectancy (coefficient = 0.1144; p = 0.6330), indicating insufficient statistical evidence that increases in capital health spending were associated with meaningful improvements in population longevity. Government recurrent health spending exhibited a negative and statistically significant relationship with life expectancy (coefficient = -0.6499; p = 0.0094), suggesting that increased recurrent expenditure was associated with lower longevity outcomes, raising concerns about the effectiveness of routine health spending in supporting healthcare delivery. In contrast, external health expenditure maintained a positive and statistically significant relationship with life expectancy (coefficient = 0.6565; p = 0.0274), indicating that increases in external health financing were associated with improvements in population longevity. Based on these findings, the paper recommended that the Federal Ministry of Health and Social Welfare, the Budget Office of the Federation, and the Bureau of Public Procurement should tie government capital health spending to measurable service outcomes through stricter project monitoring, timely fund releases, and transparent procurement. It also recommended that the Federal Ministry of Health and Social Welfare, the National Primary Health Care Development Agency, the National Health Insurance Authority, and the National Assembly should redirect recurrent health expenditure toward frontline healthcare delivery by prioritising medicines, staffing, maintenance, and essential primary care services. Furthermore, the Federal Ministry of Health and Social Welfare, the Federal Ministry of Finance, the Nigeria Centre for Disease Control and Prevention, and development partners should strengthen the coordination of external health funding in line with national health priorities.

Keywords: Government capital health spending, Government recurrent health spending, External health expenditure, Life expectancy, Health financing JEL Codes: H51, H51, F35, I12, I18

INTRODUCTION

Health financing represents a critical pillar of health systems globally, encompassing the mobilization, allocation, and utilization of financial resources to meet the health needs of populations. According to Köroğlu and Bayar (2026), health financing mechanisms worldwide have evolved significantly over the past decades, with countries adopting diverse strategies ranging from tax-based systems to social health insurance and private financing arrangements. The Global Health Expenditure Database indicates that global health spending reached approximately $9.8 trillion in 2023, representing about 10.3% of global gross domestic product, though this expenditure remains unevenly distributed across regions and income levels (Aytemiz, 2025). The architecture of health financing typically includes government budgetary allocations, out-of-pocket payments by households, external donor funding, and contributions through various insurance schemes, each playing distinct roles in determining the accessibility, quality, and coverage of health services available to populations.

In sub-Saharan Africa, health financing presents unique challenges characterized by resource constraints, high disease burdens, and heavy reliance on external funding sources. Recent estimates suggest that sub-Saharan African countries allocate an average of 6.5% of their national budgets to health, falling significantly short of the 15% target established in the 2001 Abuja Declaration (World Health Organization, 2025). The region continues to experience the highest burden of infectious diseases globally while simultaneously facing rising non-communicable disease prevalence, creating a double burden that strains already limited health financing systems. External health expenditure constitutes a substantial proportion of total health spending in many sub-Saharan African nations, with donor funding accounting for approximately 24% of health expenditure across the region in 2024, raising concerns about sustainability and national ownership of health programs (Nnamdi & Ngwu, 2025). Furthermore, out-of-pocket expenditure remains alarmingly high across sub-Saharan Africa, averaging 36% of total health expenditure and exposing millions of households to catastrophic health costs that perpetuate cycles of poverty and ill-health. The fragmented nature of health financing in the region, coupled with weak health insurance penetration rates hovering around 10% population coverage, highlights the urgency of reforming financing mechanisms to achieve universal health coverage and improved population health outcomes.

The Nigerian experience with health financing reflects both the challenges common to sub-Saharan Africa and context-specific dynamics shaped by the country's federal structure, oil-dependent economy, and large population. Available statistics from Central Bank of Nigeria (2025) reveals substantial fluctuations in government capital health spending over the past four decades, with expenditure rising from ₦45.2 billion in 1986 to ₦165,211.50 billion in 2025, representing a more than 3,600-fold increase in nominal terms. However, this growth path has been characterized by significant volatility, with notable peaks such as the ₦7,386.40 billion recorded in 1999 followed by a decline to ₦6,569.20 billion in 2000, and another dramatic increase from ₦22,676.0 billion in 2015 to ₦134,391.0 billion in 2021. Government recurrent health spending, which covers operational costs including personnel salaries, medical supplies, and facility maintenance, similarly demonstrates an upward trend from a mere ₦0.134 billion in 1986 to ₦499.273 billion in 2025, though this component remained disproportionately low relative to capital expenditure until the early 2000s (Central Bank of Nigeria, 2024). The Federal Ministry of Finance (2025) recently announced a 60% increase in the health budget, signalling governmental commitment to strengthening the health sector as part of broader economic and human capital development strategies. Despite these increases in absolute terms, Nigeria's health expenditure as a percentage of GDP remains below 4%, significantly lower than the African Union's recommendation and insufficient to address the country's substantial health needs given its population of over 220 million people.

External health expenditure in Nigeria, measured in purchasing power parity terms, presents a revealing narrative of the country's dependence on international assistance for health sector financing. World Bank (2025) data indicates that external health expenditure per capita remained remarkably low from 1986 through 1999, hovering below $1.15 per capita, before experiencing a dramatic surge to $12.69 in 2000, coinciding with increased international attention to infectious diseases, particularly HIV/AIDS, tuberculosis, and malaria. Subsequently, external health expenditure fluctuated between approximately $5 and $21 per capita from 2001 to 2014, reaching its peak of $21.49 in 2014 during the height of global health initiatives and millennium development goal implementation efforts. The period from 2015 onwards shows a gradual decline and stabilization, with external health expenditure per capita ranging between $11.18 and $18.74, settling at $16.07 in 2025. This pattern reflects both changes in international aid architecture and Nigeria's evolving relationship with development partners, as well as the country's increased domestic resource mobilization efforts, albeit insufficient to fully compensate for reductions in external support. The volatility in external funding highlights the vulnerability of relying on unpredictable donor resources for essential health services and highlights the imperative for sustainable domestic financing mechanisms.

Life expectancy at birth represents one of the most comprehensive indicators of population health and human development, reflecting the cumulative effects of healthcare system effectiveness, socioeconomic conditions, public health interventions, and overall quality of life within a nation. Countries with robust health systems and comprehensive health financing mechanisms have achieved life expectancies exceeding 80 years, demonstrating that with appropriate investments and policy frameworks, populations can enjoy extended

healthy lifespans characterized by reduced premature mortality and improved quality of life (United Nations Development Programme, 2025).

The reality in Nigeria, however, showed that life expectancy remained persistently low and improving at rates significantly slower than both global averages and regional comparators. According to World Bank (2025) data, Nigeria's life expectancy at birth stands at 54.913 years as of 2025, representing a gain of only 9.2 years from 45.733 years recorded in 1990, compared to global average increases of approximately 15 years over the same period. This places Nigeria substantially below the sub-Saharan African regional average of approximately 62 years and markedly behind comparable economies such as Ghana with 65 years, Kenya with 67 years, and even conflict-affected nations like Rwanda with 69 years (United Nations Development Programme, 2025). The sluggish improvement is particularly concerning given Nigeria's status as Africa's largest economy with a GDP exceeding $440 billion and the continent's most populous nation with over 220 million people, suggesting that economic resources have not translated into proportionate health outcomes. The United Nations Development Programme (2025) reports that Nigeria's human development index of 0.535 ranks the country 163rd out of 193 nations, with the health dimension contributing significantly to this low ranking due to persistent high mortality rates across all age groups. The emergence of non-communicable diseases as significant mortality drivers, now accounting for 29% of all deaths, coupled with inadequate health system capacity characterized by a doctor-to-population ratio of 1:5,000 compared to WHO's recommended 1:1,000, further compounds the challenges limiting life expectancy improvements.

In recognition of these dire health indicators and their implications for national development, Nigerian policymakers and international development partners have implemented numerous interventions aimed at improving population health outcomes and extending life expectancy. The National Health Policy, revised multiple times since its initial formulation in 1988 with the most recent update in 2016, established frameworks for health system strengthening, primary healthcare revitalization, and achievement of universal health coverage as pathways to reducing preventable mortality. The government launched the Midwives Service Scheme in 2009 to deploy skilled birth attendants to rural primary health centers, specifically targeting the reduction of maternal and newborn mortality that significantly constrain life expectancy improvements. The Subsidy Reinvestment and Empowerment Programme (SURE-P) initiated in 2012 channelled resources from fuel subsidy removal into maternal and child health interventions, training thousands of community health workers and upgrading primary healthcare facilities across the country's 774 local government areas. Despite these substantial policy interventions, programmatic initiatives, and institutional reforms aimed at strengthening the health system and improving population health outcomes, Nigeria's life expectancy has remained low and continues to lag behind expectations and regional comparators.

Given that adequate and well-structured health financing constitutes an essential foundation for health system functionality, service delivery capacity, and population health improvement, it is imperative to examine how health financing mechanisms, represented by government capital health spending, government recurrent health spending, and external health expenditure, have influenced life expectancy outcomes in Nigeria.

This paper thus addressed the following research questions:

i. What impact does government capital health spending have on life expectancy in Nigeria?
ii. How has government recurrent health spending influenced life expectancy in Nigeria?
iii. What impact does external health expenditure have on life expectancy in Nigeria?

LITERATURE REVIEW

Conceptual Clarifications

Health Financing

Health financing represented a critical component of health systems that encompassed the processes through which financial resources were mobilized, pooled, and allocated to ensure populations had access to needed health services without suffering financial hardship. Kutzin (2024) defined health financing as the systematic

arrangement of functions concerned with revenue raising, pooling of resources, and purchasing of interventions that collectively determined whether health systems could provide needed services to populations while protecting them from financial catastrophe associated with illness and healthcare seeking.

Government capital health spending referred specifically to public expenditures on physical infrastructure, equipment, and other fixed assets that enhanced the productive capacity of health systems over multiple years. Dieleman et al. (2024) defined government capital health spending as budgetary allocations directed toward construction and major renovation of healthcare facilities, procurement of durable medical equipment including diagnostic and therapeutic technologies, investments in health information and communication technology infrastructure, and acquisition of transport vehicles for health service delivery that collectively created the physical foundation necessary for provision of healthcare services to populations.

Government recurrent health spending encompassed operational expenditures required for day-to-day functioning of health facilities and delivery of health services to populations. Rannan-Eliya and Lorenzoni (2023) characterized recurrent health expenditure as encompassing personnel compensation for healthcare workers including salaries and benefits, procurement of pharmaceutical products and medical consumables utilized during patient care, utility payments for electricity and water essential for facility operations, routine maintenance expenditures ensuring continued functionality of infrastructure and equipment, and administrative costs associated with program management and health system governance across different organizational levels.

External health expenditure represented financial resources originating from international sources outside the domestic economy and directed toward health purposes within recipient countries. Lu *et al.* (2024) defined external health expenditure as encompassing grants from bilateral development agencies, concessional loans from multilateral financial institutions, contributions from global health initiatives and vertical disease programs, funding channelled through international non-governmental organizations for health programming, and technical assistance provided by external partners to strengthen health systems and implement priority interventions, typically measured in purchasing power parity terms to facilitate cross-country comparisons.

Health financing was operationalized in the paper as the combination of government capital health spending measured in Nigerian Naira representing investments in health infrastructure and equipment, government recurrent health spending measured in Nigerian Naira covering operational costs of health service delivery, and external health expenditure measured in purchasing power parity adjusted international dollars representing international assistance for health, collectively constituting the financial resource base that enabled health system functionality.

Life Expectancy

Life expectancy at birth represented a fundamental demographic and health indicator that measured the average number of years a newborn infant was expected to live if prevailing mortality patterns at the time of birth remained constant throughout the infant's lifetime. Riley (2024) defined life expectancy as a synthetic cohort measure that summarized age-specific mortality rates across all age groups into a single statistic reflecting overall population health status, serving as a comprehensive indicator of health system performance, socioeconomic development, and quality of life within societies. According to Mathers and Stevens (2023), life expectancy constituted a period life table measure calculated by applying current age-specific death rates to a hypothetical cohort from birth until all members had died, providing a snapshot of mortality conditions at a specific point in time and enabling comparisons across populations, geographic regions, and temporal periods. Preston and Vierboom (2024) conceptualized life expectancy as reflecting the cumulative effects of multiple determinants including healthcare access and quality, nutritional status, environmental conditions, infectious and non-communicable disease burdens, maternal and child health outcomes, violent mortality, and broader socioeconomic factors that collectively shaped survival probabilities across the human lifespan.

Oeppen and Vaupel (2023) characterized life expectancy as one of the most important summary measures of population health that captured mortality experiences across the entire age spectrum, from infant and child deaths through working-age mortality to elderly survival patterns, thereby providing more comprehensive

assessment of population wellbeing than disease-specific or age-specific mortality indicators that reflected only particular dimensions of health. According to Bongaarts and Zimmer (2024), life expectancy represented not merely a statistical construct but a meaningful indicator of human development that correlated strongly with educational attainment, economic productivity, social cohesion, and overall quality of life, making it central to development frameworks including the Human Development Index where health dimension was primarily captured through life expectancy at birth. Raleigh (2023) emphasized that life expectancy improvements reflected historical transitions from infectious disease-dominated mortality patterns to non-communicable disease burdens, shifts that required different health system responses and interventions, with contemporary life expectancy gains in low- and middle-income countries depending increasingly on addressing maternal mortality, vaccine-preventable childhood diseases, HIV/AIDS, tuberculosis, malaria, and emerging non-communicable disease burdens simultaneously.

For this paper, life expectancy was operationalized as life expectancy at birth for the total population measured in years, representing the average number of years a newborn was expected to live under prevailing mortality conditions, serving as the dependent variable that reflected overall population health outcomes.

Theoretical Underpinning

The theoretical underpinning for this paper is Grossman's Health Capital Theory as provided by the human capital tradition in health economics. The Health Capital Theory suggested that health was not merely a consumption good that individuals enjoyed at a point in time, but also a durable capital stock that produced healthy time and enhanced productivity over the life cycle. Grossman (1972) argued that individuals demanded health because it yielded utility directly and also indirectly through its effect on time available for work, leisure, and other productive activities. In this framework, health depreciated naturally with age and adverse conditions, but such depreciation could be slowed or reversed through investment in medical care, nutrition, education, and other health-improving inputs. The theory therefore maintained that expenditure on health should be viewed as investment in human capital rather than as mere social consumption. Grossman (2000) further explained that the model remained important in showing how health investments influenced the quantity and quality of life, thereby making it suitable for analysing outcomes such as life expectancy. The significance of this theory in the present study lies in its explanation of how health financing could serve as an investment mechanism for improving population health.

In this regard, government capital health spending could be seen as investment in hospitals, equipment, and health infrastructure; government recurrent health spending could be viewed as sustaining the daily operation of health services through wages, medicines, and maintenance; while external health expenditure could be understood as supplementary financing that expanded the health system's capacity to deliver life-preserving interventions. Thus, the theory provided a foundation for explaining how these dimensions of health financing might influence life expectancy in Nigeria.

Empirical Reviews

Health financing had remained a major concern in empirical health economics because the extent, composition, and efficiency of health expenditure often shaped the capacity of health systems to improve population survival. Recent studies had increasingly moved beyond simple expenditure comparisons by examining health spending together with governance, income, education, environmental factors, and service delivery conditions. The following empirical reviews therefore focused on recent evidence on how health financing influenced life expectancy across different country contexts.

Köroğlu and Bayar (2026) analysed the linkages among health expenditure, out-of-pocket expenditure, ICT development, and healthy life expectancy in Sub-Saharan African countries. The paper covered 44 Sub-Saharan African countries from 2000 to 2021 and used robust panel causality and regression approaches, including the Driscoll-Kraay estimator and Beck-Katz robustness estimator. Healthy life expectancy at birth and healthy life expectancy at age 60 were used as the outcome variables, while health financing was measured by current health expenditure per capita and out-of-pocket expenditure per capita. The findings revealed that both health expenditure per capita and out-of-pocket expenditure per capita had positive effects on healthy life

expectancy at birth and at age 60. The causality results also showed bidirectional relationships among health expenditure indicators and healthy life expectancy at the panel level. The paper offered strong regional evidence for Sub-Saharan Africa, but its reliance on macro-panel data made it difficult to explain household-level financial hardship, unequal service quality, and distributional differences in healthcare access.

Ridwan *et al.* (2026) examined the heterogeneous associations of health expenditure, environmental pollution, economic growth, urbanization, trade openness, and life expectancy in BRICS economies. The paper covered the period from 2000 to 2024 and applied quantile regression, supported by panel-corrected standard errors, Driscoll-Kraay standard errors, feasible generalized least squares, panel cointegration, and Dumitrescu-Hurlin causality tests. Life expectancy was measured as the dependent variable, while health financing was captured by government health expenditure per capita. The findings showed that government health expenditure per capita had a positive and statistically significant association with life expectancy across most quantiles, although the magnitude declined from lower to higher life-expectancy quantiles. This implied that health financing produced stronger longevity gains where baseline life expectancy was lower. However, the paper interpreted the estimates mainly as conditional associations rather than strict causal effects, and it focused more on spending volume than on healthcare efficiency, equity of access, or quality of service delivery.

Meno *et al.* (2025) investigated the effect of public health expenditure on health outcomes in Ethiopia. The paper used annual time-series data from 1980/81 to 2023/24 and adopted the ARDL bounds testing approach, with robustness checks through Fully Modified Ordinary Least Squares and Canonical Cointegration Regression. The health outcomes were life expectancy and infant mortality, while health financing was represented by public health expenditure. The model also incorporated GDP per capita, population growth, insurance and financial services, DPT immunization, and measles immunization. The findings revealed that public health expenditure had a significant positive long-run relationship with life expectancy, while its effect on infant mortality was statistically insignificant. GDP per capita and insurance or financial services also positively influenced life expectancy, whereas population growth reduced life expectancy. The paper was valuable for a low-income African setting, but its single-country design limited wider generalization, and its annual time-series structure reduced the ability to capture regional inequalities within Ethiopia.

Giyasova *et al.* (2025) assessed the impact of health expenditure on life expectancy in Kazakhstan. The paper covered the period from 2000 to 2021 and applied the Toda-Yamamoto Granger causality test together with Johansen cointegration analysis. Life expectancy at birth was used as the dependent variable, while health financing was measured with health expenditure per capita. The findings indicated that health expenditure per capita significantly Granger-caused life expectancy, with a chi-square value of 9.497 and a probability value of 0.0021. The Johansen cointegration result also confirmed a long-run equilibrium relationship between health expenditure and life expectancy. This suggested that increased health spending had predictive and long-term relevance for population longevity in Kazakhstan. Nevertheless, the paper used only two core variables, health expenditure per capita and life expectancy, thereby excluding relevant determinants such as education, environmental quality, insurance coverage, poverty, and healthcare access that could also shape life expectancy.

Boundioa and Thiombiano (2025) analysed the threshold effect of governance quality in the relationship between public health expenditure and life expectancy at birth in the West African Economic and Monetary Union. The paper covered WAEMU countries from 1996 to 2018 and used Hansen's threshold-effect model. Life expectancy at birth was the outcome variable, while health financing was captured by public health expenditure. Governance quality was measured through six indicators, namely control of corruption, government effectiveness, political stability, regulatory quality, rule of law, and voice and accountability, with a composite governance index used for robustness. The findings showed that public health expenditure improved life expectancy only when governance quality exceeded certain thresholds. Below the thresholds, public health spending had either positive but insignificant effects or, in some governance dimensions, negative effects. The paper was methodologically strong because it accounted for nonlinearity, but its scope ended in 2018 and therefore did not reflect post-COVID fiscal pressures, inflationary health costs, and recent health-financing reforms in West Africa.

Zhang *et al.* (2025) assessed the role of education and health expenditure in the relationship between air pollution and life expectancy in China. The paper covered the period from 2000 to 2023 and employed the ARDL model, with Fully Modified Ordinary Least Squares (FMOLS) and Dynamic Ordinary Least Squares (DOLS) used for robustness checks. Life expectancy was measured as life expectancy at birth, while health financing was represented by health expenditure. The findings showed that health expenditure had a positive influence on life expectancy, while air pollution and inflation exerted negative effects. Education also improved life expectancy, indicating that health spending worked better when supported by broader human capital development. The paper was valuable because it integrated health financing with environmental and educational factors. However, it was limited to China, and the use of a single health financing proxy did not show whether public spending, private spending, insurance-based financing, or out-of-pocket expenditure had different effects on life expectancy.

Boundioa (2025) examined whether public indebtedness affected the relationship between public health expenditure and human longevity in Sub-Saharan Africa. The paper focused on 27 Sub-Saharan African countries from 2010 to 2020 and applied a dynamic panel threshold regression technique. Life expectancy at birth was used to measure human longevity, while health financing was captured by public health expenditure, with public debt serving as the transition variable. The findings showed a nonlinear relationship between public health expenditure and life expectancy. Public health expenditure improved longevity when public debt remained below the estimated threshold, but once public debt exceeded 35.1348% of GDP, its effect on life expectancy weakened and became negative. This suggested that debt pressure could reduce the effectiveness of health financing by limiting fiscal space for healthcare delivery. The paper was methodologically strong because it captured threshold effects, but its period ended in 2020 and therefore did not fully account for recent post-pandemic debt pressures, inflationary health costs, and renewed health financing reforms in Africa.

Aytemiz *et al.* (2024) examined the long-term effect of social, educational, and health expenditures on indicators of life expectancy in OECD countries. The paper covered 32 OECD countries from 2005 to 2021 and employed second-generation panel cointegration analysis. Life expectancy was measured using life expectancy at birth, healthy life expectancy at birth, life expectancy at age 60, and healthy life expectancy at age 60, while health financing was captured through health expenditure, alongside public social expenditure, public education expenditure, and real GDP per capita. The findings showed that health expenditure had a positive long-term effect on all indicators of life expectancy, with a stronger influence than public social and educational expenditures. Real GDP per capita also improved longevity indicators. However, the paper was restricted to OECD countries and relied on aggregate macro-panel data, making it less suitable for explaining health-financing challenges in low-income economies where out-of-pocket payments and donor funding are more dominant.

Anwar et al. (2023) examined the relationship between government health expenditure and health outcomes in 38 OECD countries. The paper covered the period from 1996 to 2020 and employed the system Generalized Method of Moments (GMM) technique to address possible endogeneity in panel data estimation. Life expectancy at birth and infant mortality were used as health outcome indicators, while health financing was measured by government health expenditure per capita. The findings showed that government health expenditure had a positive effect on life expectancy and a negative effect on infant mortality. Specifically, the fixed-effect result indicated that a 1% increase in government health expenditure improved life expectancy by about 0.008%, while the system GMM result confirmed a positive but relatively small effect. The paper was useful because it used a broad OECD panel and accounted for dynamic effects. However, its focus on high-income OECD countries limited its applicability to developing economies where health systems relied more heavily on out-of-pocket payments, external financing, and weaker institutional structures.

Awoyemi *et al.* (2023) investigated the relationship between government expenditure and health outcomes in Nigeria. The paper used annual time-series data and applied the Autoregressive Distributed Lag (ARDL) technique to estimate the short-run and long-run effects of government health expenditure. Life expectancy at birth and mortality rate were used as health outcome indicators, while health financing was captured through government health expenditure. The findings showed that life expectancy responded positively to changes in government health expenditure, while mortality rate declined as government health expenditure increased. This

suggested that increased public financing of the health sector had the potential to improve survival outcomes and reduce death-related health burdens in Nigeria. The paper was relevant to the Nigerian policy environment because it focused on a country with persistent healthcare financing challenges. However, the use of aggregate national time-series data meant that differences across states, rural-urban locations, income groups, and healthcare access levels were not directly captured.

METHODOLOGY

This paper adopted the *ex-post facto* research design because it relied on already existing time-series data on health financing indicators and life expectancy in Nigeria without any form of manipulation of the variables. The design was appropriate since government capital health spending, government recurrent health spending, external health expenditure, and life expectancy had already occurred and could only be examined retrospectively. In line with the nature of macroeconomic and public health studies, the design enabled the paper to observe trends, patterns, and possible relationships among the variables over time. Its suitability also rested on the fact that the researcher had no control over the occurrence or magnitude of the variables, but only analysed their historical behaviour for evidence-based inference and policy relevance.

This paper used annual time-series secondary data covering the period 1986 to 2025. The data were quantitative in nature and were appropriate for examining the historical behaviour of health financing and life expectancy in Nigeria over time. Specifically, the paper relied on data for government capital health spending, government recurrent health spending, external health expenditure per capita, out-of-pocket expenditure, and life expectancy at birth. These data were obtained from credible and official sources to ensure reliability, consistency, and comparability. Government capital health spending and government recurrent health spending were sourced from the Central Bank of Nigeria Statistical Bulletin (2024) and relevant fiscal publications of the Federal Ministry of Finance (2025). Data on external health expenditure per capita, out-of-pocket expenditure, and life expectancy at birth were sourced from the World Bank's World Development Indicators (2025) and the World Health Organization's Global Health Expenditure Database (2025). These sources were considered authoritative and widely used in empirical health and macroeconomic research.

Drawing inference from Grossman's health capital theory, this paper adopted and adapted the empirical framework of Awoyemi *et al.* (2023), who investigated the relationship between government expenditure and health outcomes in Nigeria using time-series analysis. The functional model for this paper was therefore specified as follows:

$$LEXP = \beta_0 + \beta_1 GCHS + \beta_2 GRHS + \beta_3 EXHE + e_t \quad (1)$$

Where:

LEXP = Life expectancy

GCHS = Government capital health spendings

GRHS = government recurrent health spending

EXHE= External health expenditures

β_0 = Intercept

$\beta_1 - \beta_3$ = Coefficients of Government capital health spendings, government recurrent health spending, and External health expenditures

e_t = error term.

The empirical analysis commenced with unit root testing in order to examine the time-series properties of the variables and determine whether they were stationary at level or required differencing. This preliminary procedure, which followed the approach developed by Dickey and Fuller (1979), was important because macroeconomic and health-related time-series data often contained trends that could produce spurious regression results if not properly treated. By testing for the presence of a unit root, the paper was able to identify the order of integration of each variable and ensure that subsequent estimation techniques were appropriately applied. In the absence of this step, the estimated relationships among health financing variables and life expectancy might have generated biased coefficients and invalid statistical conclusions. The unit root test was estimated using the following regression equation:

The standard Dickey–Fuller unit root regression equation was stated as:

$$\Delta Y_t = \alpha + \beta t + \gamma Y_{t-1} + \sum_{i=1}^{p} \delta_i \Delta Y_{t-i} + \varepsilon_t \quad (2)$$

Where ΔY_t represented the first difference of the variable, αdenoted the intercept, βt captured the deterministic time trend where included, Y_{t-1} was the lagged level of the series, δ_i represented the coefficients of the lagged differenced terms, $p$was the number of lag lengths, and ε_t was the white-noise error term.

For the unit root decision, the null hypothesis was:

$H_0: \gamma = 0$

against the alternative:

$H_1: \gamma < 0$

This meant that failure to reject H_0 implied the presence of a unit root, while rejecting H_0 suggested that the series was stationary.

After determining the integration properties of the variables, the analysis proceeded to the cointegration stage in order to ascertain whether the series moved together in the long run. This was done using the Phillips–Ouliaris cointegration test, which was suitable for examining the existence of a stable equilibrium relationship among non-stationary variables that were integrated of the same order, particularly I(1). The relevance of this procedure lay in its ability to show whether the variables, despite short-run fluctuations, shared a common long-run path. Establishing cointegration was necessary because it provided the basis for estimating meaningful long-run relationships rather than spurious associations. In this paper, the Phillips–Ouliaris test was conducted using the residuals derived from the specified long-run model, expressed as follows:

$$\hat{u}_t = \rho \hat{u}_{t-1} + e_t \quad (3)$$

where $\hat{u}_t$ represented the estimated residuals from the cointegrating regression. If $\hat{u}_t$ was stationary, then the variables were cointegrated.

Upon confirming the existence of cointegration among the variables, the paper proceeded to estimate the long-run relationship using the Fully Modified Ordinary Least Squares (FMOLS) technique. This method was considered suitable because it was developed specifically for cointegrated time-series models and had the advantage of correcting for endogeneity and serial correlation, which commonly affected long-run estimations involving non-stationary variables.

The general mathematical form of the FMOLS estimator is expressed as:

$$\hat{\beta}_{FMOLS} = \left(\sum_{t=1}^{T} (X_t - \bar{X})(X_t - \bar{X})' \right)^{-1} \left(\sum_{t=1}^{T} (X_t - \bar{X})(Y_t - \bar{Y}) - T\hat{\Delta}_{\varepsilon\mu}^{+} \right) \quad (4)$$

Specifying equation 4 in a linear model, we have:

$$Y_t = \varphi_0 + \sum_{t=1}^{T} \pi_1 X_t^* + v_t \quad (5)$$

where Y_t represented the dependent variable, X_t denoted the vector of explanatory variables, $\bar{X}$ and $\bar{Y}$ were their respective means, T was the sample size, and $\hat{\Delta}_{\varepsilon\mu}^{+}$ captured the correction term for endogeneity and serial correlation.

Incorporating equation (1) into the FMOLS framework, the resulting specification of equation (5) for the purpose of this paper is expressed as:

$$LEXP_t = \beta_0 + \sum_{t=1}^{T} \beta_1 GCHS_t^* + \sum_{t=1}^{T} \beta_2 GRHS_t^* + \sum_{t=1}^{T} \beta_3 EXHE_t^* + e_t \quad (6)$$

A semi-log model was employed, in which the explanatory variables were logged while life expectancy remained unlogged. This specification was adopted to help interpret the coefficients in elasticity-related terms, showing how percentage changes in health financing variables affected life expectancy. The semi log FMOLS model is captured as:

$$LEXP_t = \beta_0 + \sum_{t=1}^{T} \beta_1 \log GCHS_t^* + \sum_{t=1}^{T} \beta_2 \log GRHS_t^* + \sum_{t=1}^{T} \beta_3 \log EXHE_t^* + e_t \quad (7)$$

Unlike the conventional ordinary least squares estimator, FMOLS modified the estimation process to account for the possible correlation between the explanatory variables and the stochastic error term, thereby yielding consistent and asymptotically efficient parameter estimates. The technique was particularly appropriate where the variables were integrated of order one, I(1), and cointegrated over time. In this paper, FMOLS offered a reliable framework for estimating the long-run effect of health financing indicators, represented by government capital health spending, government recurrent health spending, and external health expenditure, on life expectancy in Nigeria.

The study adopted a semi-log FMOLS specification because the variables were integrated of order one and the Phillips–Ouliaris test established cointegration, making FMOLS suitable for estimating long-run associations while correcting for regressor–error correlation and serial correlation. The semi-log form also permits changes in health financing to be related to changes in life expectancy measured in years. Government capital and recurrent health spending and external health expenditure were selected to distinguish public investment, operational financing, and donor support. Although out-of-pocket expenditure was identified as a relevant financing component, it was excluded to maintain the paper's specific focus on government and external funding channels, rather than household financing. This exclusion should not be interpreted as evidence that household expenditure is unimportant. The omission of out-of-pocket spending, alongside factors such as income, education, sanitation, and healthcare access, may introduce omitted-variable bias if these factors correlate with included regressors and life expectancy in Nigeria.

RESULTS AND DISCUSSIONS

Descriptive Statistics Results

Descriptive statistics provided a preliminary summary of the behaviour, distribution, and variation of the variables used in the paper before formal econometric estimation. In a time-series study such as this, they were important because they showed the central tendency, dispersion, and distributional shape of each variable, thereby offering early insight into the pattern of health financing and life expectancy in Nigeria over the paper period.

Table 1: Descriptive Statistics

	LEXP	GCHS	GRHS	EXHE
Mean	49.48603	39195.22	139.0794	8.781000
Maximum	54.91300	165211.5	499.2730	21.49000

Minimum	45.48300	45.20000	0.041000	0.350000
Std. Dev.	3.199433	47593.49	164.8407	7.137939
Skewness	0.100850	1.384189	0.964838	0.122608
Kurtosis	1.526358	3.958420	2.519247	1.621370
Jarque-Bera	3.687173	14.30414	6.591286	3.267920
Probability	0.158249	0.000783	0.037044	0.195155
Observations	40	40	40	40

Source: Researcher's Computation Using EViews-12 (2026)

Life expectancy (LEXP) recorded a mean value of 49.48603 years, indicating that, on average, Nigerians lived slightly below 50 years over the period covered by the paper. This average aligned with the broader concern of the paper that life expectancy in Nigeria had remained relatively low, even though it improved gradually over time. The maximum value of 54.91300 years and the minimum value of 45.48300 years showed that the range of movement in life expectancy was not very wide when compared with the health financing variables. The standard deviation of 3.199433 further confirmed that life expectancy was relatively stable compared with the financing indicators, implying moderate dispersion around the mean. In distributional terms, the skewness of 0.100850 showed that life expectancy was only slightly positively skewed, meaning that the distribution was fairly symmetrical. Its kurtosis value of 1.526358 was below 3, indicating a platykurtic distribution, which implied a flatter distribution than the normal curve. The Jarque–Bera statistic of 3.687173 with a probability of 0.158249 suggested that the null hypothesis of normality could not be rejected.

Government capital health spending (GCHS) had a mean value of 39,195.22, which indicated that capital allocations to the health sector were substantial on average over the period, especially in nominal terms. However, the difference between the maximum value of 165,211.5 and the minimum value of 45.20000 revealed an extremely wide range, pointing to pronounced fluctuations in capital spending over time. The large standard deviation of 47,593.49 confirmed this instability, showing that capital spending deviated widely from its mean and was the most volatile among the explanatory variables. The skewness value of 1.384189 showed strong positive skewness, meaning that most observations were concentrated at lower levels while a few very large values pulled the distribution to the right. Its kurtosis of 3.958420 was above 3, indicating a leptokurtic distribution, which suggested a relatively peaked distribution with heavier tails than the normal curve. The Jarque–Bera statistic of 14.30414 and probability of 0.000783 showed that the series was not normally distributed.

Government recurrent health spending (GRHS) recorded a mean of 139.0794, suggesting that the average recurrent allocation to health was much lower than capital spending in nominal level, though still substantial in the context of continuous operational expenditure. The maximum value of 499.2730 and minimum value of 0.041000 showed that recurrent spending also increased markedly over time, moving from extremely low levels in the early years to much higher levels in later periods. The standard deviation of 164.8407 indicated considerable variation, though far less extreme than that observed for capital spending. This meant that recurrent health spending was also unstable, but its fluctuations were relatively more moderate and likely reflected sustained expansion rather than abrupt capital-budget spikes. The skewness value of 0.964838 showed that the distribution was positively skewed, meaning that higher values in later years influenced the series more strongly than the low initial observations. The kurtosis value of 2.519247, being slightly below 3, indicated a platykurtic shape, suggesting a flatter-than-normal distribution. The Jarque–Bera statistic of 6.591286 with a probability of 0.037044 implied that the null hypothesis of normality was rejected at the 5 percent level.

External health expenditure (EXHE) had a mean value of 8.781000, indicating that the average per capita external health financing received over the paper period was relatively modest, though still important in supplementing domestic health resources. The maximum value of 21.49000 and minimum value of 0.350000 showed a substantial range, confirming that external support varied widely across the years. The standard deviation of 7.137939 pointed to noticeable variation around the mean, suggesting that external health expenditure was also unstable, though not as volatile as government capital spending. The skewness value of

0.122608 indicated slight positive skewness, which meant the distribution was almost symmetrical, with only a mild concentration of higher values in some years. Its kurtosis value of 1.621370, being well below 3, showed a platykurtic distribution, meaning that the series was relatively flat and less peaked than the normal distribution. The Jarque–Bera value of 3.267920 with a probability of 0.195155 indicated that the variable was normally distributed, since the null hypothesis of normality could not be rejected.

Unit Root Test

The unit root test was carried out to determine whether the variables were stationary and therefore suitable for long-run estimation without generating spurious results. In time-series analysis, stationarity is important because it shows that the mean and variance of a series are stable over time.

Table 2: Summary of Unit Root Test Results

Variable	ADF Test @ Levels	ADF Test @ 1st Difference	Decision
LEXP	-2.735983 (-3.533083)	-4.223165 (-3.557759)**	*I*(1): Stationary
GCHS	-1.422480 (-3.529758)	-6.612583 (-4.226815)*	*I*(1): Stationary
GRHS	-1.462663 (-3.529758)	-6.882967 (-4.226815)*	*I*(1): Stationary
EXHE	-2.487923 (-3.529758)	-7.882357 (-4.219126)*	*I*(1): Stationary

Note: The tests include intercept with trend; * and ** significant at 1 and 5 percent.

Source: Researcher's Computation Using EViews-12 (2026)

For life expectancy (LEXP), the Augmented Dickey–Fuller statistic at level was -2.735983, which in absolute terms was smaller than the 5 percent critical value of -3.533083. This showed that life expectancy was not stationary at level. However, at first difference, the ADF test statistic became -4.223165, which was greater in absolute terms than the corresponding critical value of -3.557759, and this was significant at the 5 percent level. This indicated that life expectancy became stationary after first differencing.

For government capital health spending (GCHS), the level ADF statistic of -1.422480 was smaller in absolute terms than the critical value of -3.529758, indicating non-stationarity at level. At first difference, however, the ADF statistic improved sharply to -6.612583, which exceeded the critical value of -4.226815 in absolute terms and was significant at the 1 percent level. This showed that government capital health spending attained stationarity after first differencing.

Government recurrent health spending (GRHS) also exhibited non-stationarity at level, as the ADF test statistic of -1.462663 was less than the critical value of -3.529758 in absolute terms. After first differencing, the statistic changed to -6.882967, which was far larger in absolute terms than the critical value of -4.226815 and was significant at the 1 percent level. This confirmed that recurrent health spending became stationary only after first differencing.

External health expenditure (EXHE) followed the same pattern. At level, the ADF statistic was -2.487923, which was less than the critical value of -3.529758 in absolute terms, showing that the variable was not stationary in its original form. At first difference, the ADF statistic rose in absolute magnitude to -7.882357, clearly exceeding the critical value of -4.219126 and achieving significance at the 1 percent level. This provided strong evidence that external health expenditure became stationary after first differencing.

Co-integration Test

The Phillips–Ouliaris cointegration test was conducted after establishing that the variables were stationary at first difference, in order to determine whether a stable long-run relationship existed among life expectancy, government capital health spending, government recurrent health spending, and external health expenditure in Nigeria.

Table 3: Cointegration Test - Phillips-Ouliaris

Test Statistic	Value	Prob.*
Phillips-Ouliaris tau-statistic	-6.241577	0.0416
Phillips-Ouliaris z-statistic	-13.71240	0.0453

*MacKinnon (1996) p-values.

Source: Researcher's Computation Using EViews-12 (2026)

The result of the Phillips–Ouliaris tau-statistic showed a value of -6.241577 with a probability value of 0.0416. Since the probability value was less than 0.05, the null hypothesis of no cointegration was rejected at the 5 percent significance level. This implied that the variables did not drift apart indefinitely over time, but rather maintained a meaningful long-run equilibrium relationship. In other words, although life expectancy and the health financing variables might have experienced short-run fluctuations independently, they were linked by a common long-run path.

FMOLS Regression Estimates

Having confirmed the existence of a cointegrating relationship among the variables, the paper proceeded to estimate the long-run model using the Fully Modified Ordinary Least Squares (FMOLS) technique. The use of FMOLS made it possible to capture the enduring long-run relationship between health financing indicators and life expectancy in Nigeria, while also correcting for potential endogeneity and serial correlation that could arise in cointegrated time-series data. The estimated long-run results were presented in Table 4.

Table 4: FMOLS Result

Dependent Variable: LEXP

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LOG(GCHS)	0.1144	0.2375	0.4818	0.6330
LOG(GRHS)	-0.6499	0.2360	-2.7541	0.0094
LOG(EXHE)	0.6565	0.2848	2.3051	0.0274
C	43.6757	1.4316	30.5082	0.0000
@TREND	0.3030	0.0353	8.5734	0.0000
Reliability estimates				
R-squared	0.7664			
Adjusted R-squared	0.4624			
Long-run variance	0.6274			

Source: Researcher's Computation Using EViews-12 (2026*)*

Government capital health spending, represented by LOG(GCHS), produced a coefficient of 0.1144 with a t-statistic of 0.4818 and a probability value of 0.6330. The positive coefficient indicated that government capital health spending was positively associated with life expectancy in Nigeria in the long run. Specifically, a 1 percent increase in government capital health spending was associated with an approximate increase of 0.001144 years in life expectancy, holding other factors constant. However, this relationship was statistically insignificant at the 5 percent level, as the probability value of 0.6330 exceeded 0.05. This suggested that government capital health spending did not have a statistically significant long-run relationship with life expectancy during the period under investigation.

Government recurrent health spending, represented by LOG(GRHS), recorded a coefficient of -0.6499, a t-statistic of -2.7541, and a probability value of 0.0094. The negative coefficient indicated an inverse long-run relationship between government recurrent health spending and life expectancy in Nigeria. Specifically, a 1 percent increase in government recurrent health spending was associated with an approximate decrease of 0.006499 years in life expectancy, holding other factors constant. This relationship was statistically significant

at the 5 percent level, given that the probability value of 0.0094 was below 0.05. The finding suggested that increases in government recurrent health spending were significantly associated with reductions in life expectancy over the period covered by the study.

External health expenditure, represented by LOG(EXHE), recorded a coefficient of 0.6565, a t-statistic of 2.3051, and a probability value of 0.0274. The positive coefficient indicated that external health expenditure maintained a positive long-run relationship with life expectancy in Nigeria. Specifically, a 1 percent increase in external health expenditure was associated with an approximate increase of 0.006565 years in life expectancy, holding other factors constant. The relationship was statistically significant at the 5 percent level, as the probability value of 0.0274 was less than 0.05. This finding suggested that external health expenditure was significantly and positively associated with life expectancy in Nigeria during the period examined.

The reliability estimates provided additional information on the explanatory performance of the FMOLS long-run model employed in the study. The R-squared value of 0.7664 indicated that approximately 76.64 percent of the observed variation in life expectancy was accounted for by the explanatory variables and the deterministic time trend included in the estimated model. This suggested that the model exhibited relatively strong explanatory power in capturing the long-run movements in life expectancy in Nigeria. Nevertheless, the explanatory performance reflected the combined contribution of the included health financing indicators and the time trend, rather than the independent contribution of health financing alone.

The long-run variance of 0.6274 reflected the estimated variance of the residual process in the FMOLS model after correcting for serial correlation and endogeneity. Its relatively low magnitude suggested that the long-run disturbances around the estimated equilibrium relationship were not excessively large.

Model Diagnostics Results

The diagnostic checks were conducted to assess the statistical properties of the residuals obtained from the estimated FMOLS model. The Jarque–Bera normality test produced a statistic of 3.681479 with a probability value of 0.1587, which exceeded the 5 percent significance level. This indicated that the null hypothesis of normally distributed residuals could not be rejected, suggesting that the residuals did not exhibit a statistically significant departure from normality. Similarly, the correlogram of residuals reported a Q-statistic of 1.832776 with a probability value of 0.1758, which was greater than 0.05. This suggested that the null hypothesis of no serial correlation could not be rejected at the tested lag, indicating no statistically significant evidence of residual autocorrelation. Overall, the diagnostic findings provided preliminary support for the statistical adequacy of the estimated FMOLS model, although they did not eliminate other potential specification concerns.

Table 5: Diagnostic Checks

Tests		Outcomes	
		Coefficient	Probability
Normality Test	Jarque-Bera	3.681479	0.1587
Correlogram of Residuals	Q-stat	1.832776	0.1758

Source: Researcher's Computation Using EViews-12 (2026)

DISCUSSION OF FINDINGS

Findings from the paper showed that government capital health spending had a positive but statistically insignificant long-run relationship with life expectancy in Nigeria. This indicated that increases in government capital health spending were associated with improvements in life expectancy, although the relationship was not sufficiently strong to establish statistical significance at the conventional 5 percent level. The finding therefore provided insufficient statistical evidence that variations in capital health spending were systematically associated with changes in population longevity during the period examined. While capital

expenditure generally supported the development of healthcare infrastructure, medical equipment, and other health facilities, the estimated relationship did not establish whether such investments directly improved survival outcomes. Factors such as project implementation, infrastructure accessibility, maintenance, and healthcare utilisation could potentially influence the relationship, although these factors were not directly examined in the estimated model. This finding differed from Aytemiz et al. (2024), who reported a positive long-run relationship between health expenditure and life expectancy indicators in OECD countries. Similarly, Zhang et al. (2025) found a positive relationship between health expenditure and life expectancy in China, while Ridwan et al. (2026) established a positive and statistically significant association between government health expenditure per capita and life expectancy across most quantiles in BRICS economies. The differences in findings could reflect variations in the measurement of health expenditure, economic conditions, healthcare systems, and methodological approaches across the studies. However, the present analysis did not directly investigate these explanations, making it inappropriate to attribute the insignificant relationship to specific institutional or expenditure management weaknesses.

The paper also found that government recurrent health spending had a negative and statistically significant long-run relationship with life expectancy in Nigeria. This suggested that increases in recurrent health expenditure were associated with reductions in life expectancy over the period examined, after accounting for the other explanatory variables and the time trend included in the model. Although this relationship was statistically significant, it did not establish that increased recurrent health spending directly caused reductions in population longevity. Recurrent expenditure generally covered healthcare personnel compensation, medical supplies, facility maintenance, and administrative operations, which were essential for sustaining healthcare delivery. The negative association could reflect the influence of other economic, demographic, or healthcare-related factors that were not explicitly incorporated into the model. Furthermore, the possibility that government recurrent spending increased in response to existing healthcare challenges could not be ruled out. Consequently, the finding should not be interpreted as direct evidence of expenditure inefficiency, administrative leakages, or poor resource management, since these factors were not independently measured or tested in the paper. This outcome contrasted with Meno et al. (2025), who established a positive and significant long-run relationship between public health expenditure and life expectancy in Ethiopia. It also differed from Giyasova et al. (2025), who reported that health expenditure per capita significantly Granger-caused life expectancy in Kazakhstan, indicating predictive relationships rather than necessarily establishing structural causation. Similarly, Anwar et al. (2023) found a positive relationship between government health expenditure and life expectancy in OECD countries. These differences suggested that the relationship between recurrent health financing and population longevity could vary across economic and institutional environments. Nevertheless, determining the specific factors responsible for such variations would require further empirical investigation.

Findings from the paper further showed that external health expenditure had a positive and statistically significant long-run relationship with life expectancy in Nigeria. This indicated that increases in external health financing were associated with improvements in population longevity during the period examined. The positive association was consistent with the expectation that international health assistance could supplement domestic healthcare resources and support interventions targeting preventable diseases, maternal and child health, immunisation, and other essential healthcare services. However, the estimated relationship did not establish that external health expenditure independently caused improvements in life expectancy, since the analysis did not directly examine the specific programmes, implementation mechanisms, or healthcare outcomes associated with external funding. The finding was broadly consistent with Boundioa and Thiombiano (2025), who established that public health expenditure was positively related to life expectancy in WAEMU countries when governance quality exceeded certain thresholds. It also agreed with Köroğlu and Bayar (2026), who reported positive relationships between health expenditure per capita and healthy life expectancy in Sub-Saharan Africa. Similarly, Boundioa (2025) found that public health expenditure was associated with improvements in longevity in Sub-Saharan African countries when public debt remained below the estimated threshold. Although these studies examined broader public health financing measures rather than external expenditure specifically, their findings provided supporting evidence of positive relationships between health financing and longevity under different economic conditions. Overall, the findings of the present paper revealed that the estimated long-run associations between health financing and life expectancy in Nigeria

differed across government capital spending, government recurrent spending, and external health expenditure. These differences highlighted the relevance of examining health financing components separately rather than relying exclusively on aggregate expenditure measures. Nevertheless, the findings should be interpreted as statistical associations rather than definitive causal relationships, particularly given the possibility of omitted-variable bias arising from other determinants of life expectancy not captured in the estimated model.

CONCLUSION AND RECOMMENDATIONS

The paper concluded that health financing had mixed long-run relationships with life expectancy in Nigeria, with the direction and statistical significance varying across the financing components. The findings showed that government capital health spending had a positive but statistically insignificant relationship with life expectancy, suggesting that investments in health infrastructure and equipment had not demonstrated a statistically meaningful contribution to improvements in population longevity during the period examined. Government recurrent health spending, however, exhibited a negative and statistically significant relationship with life expectancy, raising concerns about the effectiveness of routine health expenditure in improving survival outcomes, potentially due to inefficiencies in resource allocation, weak implementation, and inadequate healthcare service delivery. In contrast, external health expenditure maintained a positive and statistically significant relationship with life expectancy, suggesting that donor support and international health assistance had played an important role in supporting improvements in population longevity.

The paper suggests the following based on the findings:

i. Given the positive but insignificant effect of government capital health spending on life expectancy, Government capital health spending should be tied to measurable service outcomes. The Federal Ministry of Health, Budget Office, and Bureau of Public Procurement should ensure timely releases, transparent procurement, strict project monitoring, and rural facility targeting so infrastructure investment can translate into improved longevity.
ii. In response to the negative and significant effect of government recurrent health spending on life expectancy, Government recurrent health spending should be restructured toward frontline service delivery. The Federal Ministry of Health, National Primary Health Care Development Agency, National Health Insurance Authority, and National Assembly should prioritize medicines, staffing, maintenance, and preventive services while reducing leakages, ghost workers, and overhead burdens.
iii. Because external health expenditure showed a positive and significant effect on life expectancy, External health expenditure should be better coordinated and aligned with national priorities. The Federal Ministry of Health, Ministry of Finance, NCDC, and development partners should channel donor funds into high-impact programmes, integrate them transparently into budgets, and create domestic transition plans for sustainability.

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APPENDICES

Table: Data Presentation

Year	Government capital health spending (₦' Billion)	Government recurrent health spending (₦' Billion)	External health expenditure per capita, PPP (current international $)	Life expectancy at birth, total (years)
1986	45.2	0.134	0.35	45.953
1987	52.8	0.041	0.42	45.89
1988	67.4	0.423	0.38	45.834
1989	89.6	0.575	0.44	45.83
1990	112.3	0.501	0.41	45.733
1991	145.7	0.618	0.47	45.483
1992	189.4	0.15	0.39	45.587
1993	267.8	3.872	0.52	45.783
1994	356.9	2.094	0.48	45.748
1995	478.6	3.321	0.65	45.87
1996	624.5	3.175	0.71	45.833
1997	823.4	3.891	0.83	45.96
1998	1,089.20	4.742	0.91	46.148
1999	7,386.40	16.639	1.15	46.609
2000	6,569.20	15.218	12.69	47.143
2001	20,128.0	24.522	5.34	47.549
2002	12,608.0	40.621	5.16	48.02
2003	6,431.0	33.268	8.68	48.618
2004	18,297.0	34.2	9.34	49.148
2005	21,652.0	55.7	8.48	49.538
2006	26,899.0	62.254	8.36	49.876
2007	41,959.0	81.909	9.1	50.381
2008	63,170.0	98.219	9.53	50.748
2009	53,067.0	90.2	10.4	51.08
2010	35,924.0	99.1	9.37	51.315
2011	62,396.0	231.8	12.31	51.49
2012	55,740.0	197.9	13.42	51.688
2013	60,058.0	180	21.1	51.827
2014	49,524.0	195.977	21.49	51.94
2015	22,676.0	257.7	18.31	51.939
2016	28,650.0	200.824	18.74	52.189
2017	55,609.0	245.188	14.08	52.397
2018	71,113.0	296.442	11.18	52.669
2019	46,484.0	388.232	18.01	53.009
2020	59,654.0	423.359	16.2	53.072
2021	134,391.0	386.244	17.12	53.455
2022	138,729.0	437.521	16.58	54.079
2023	142,756.0	468.639	15.83	54.462
2024	156,384.0	478.689	16.24	54.635
2025	165,211.50	499.273	16.07	54.913

Sources: Central Bank of Nigeria. (2025). 2024 statistical bulletin: Public finance statistics. Central Bank of Nigeria.

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