



PUBLIC CAPITAL EXPENDITURE AND LIFE EXPECTANCY IN NIGERIA: A PRE-DEMOCRATIC AND DEMOCRATIC ERA ANALYSIS

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Abstract

This study on the impact of public expenditure on life expectancy in Nigeria is from the pre-democratic era (1984 – 1998) to the democratic era (1999 – 2021) to determine which era impacted more on the longevity of the citizens. The ex-post Facto research design was used for the study with data from secondary sources. The study employed both descriptive and inferential statistics. The population of the study is the 36 states of Nigeria and the FCT. The sample of the study using the convenience sampling technique are the published statistics from the federal ministry of finance (FMF), central bank of Nigeria (CBN), the federal ministry of health, federal ministry of education, national bureau of statistics and the world bank group. The study employed the use of the statistical package for social sciences (SPSS – 25), to analyse data. The findings revealed that the pre-democratic era fared-well in the health sector haven increased life expectancy by 0.09% against the democratic era. The study therefore recommends an increase in the capital expenditure to the health sector with the target of attaining the recommended 15 to 20 percentage of total budget as proposed by the United Nations economic, social and cultural organization (UNESCO) for developing economies and dire need for expenditure control to avert undue interference on approved expenditures from the execution to accountability phases of the budget cycle.

Keywords: Public Expenditure, Life Expectancy, Health budget

1.0 Introduction

The state of the health care system in Nigeria today is alarming as the level of dilapidation of health facilities is not to be emphasized, the level of inadequacies of health facilities has also led our nation running into health tourism occasioned by the several oversea medical trips for average and upper class citizens and the death of common Nigerians who find it impossible to afford the health bills in foreign currencies and even the huge bills in our domestic currency by private medical practitioners. The persistent increase in the nation's capital expenditure on a yearly basis without any improvement in infant

mortality and average longevity in African countries and particularly west African countries as stated by (Onoferi, *et al.* (2021), Ogumbenle, *et al.* (2013), Alhassan, *et al.* (2018) UN vision 2030, WHO (2019) is a reason to evaluate Nigeria's health expenditure and the life expectancy of her citizens. In Nigeria today, the 2022 budget yet represents four (4) percent of the total budget as well as preceding year's budget as shown in the nation's budget. This is a true reflection of the value of the Nigerian government on the health of her citizens. These budgets are all not in compliance with

the world health organization's 15 to 20 % of total appropriation per year. The budget yet seemingly the largest health budget in history irrespective of the present world health organization (WHO) exposition with Nigeria as a lead country in under 5 mortality rates (UN,2017). With the increase budget from 2017 to 2022 the value hasn't gone above 4 percent; thus, the life expectancy may not have improved in Nigeria, and it's imperative to determine if it has ever made any impact on the mortality level or average life expectancy in Nigeria. Thus, it is important to find out the impact of public capital expenditure on health and average life expectancy in Nigeria as she ranks 178th position from 2007 to 2019 in the world with male life expectancy of 54.7 years and 55.7 years for females and an average of 55.2 years for Nigeria (Nigeria demographic survey,2016: UNICEF,2016:World Bank,2016). The responsibility to improve the life expectancy is the governments, as her expenditure in the sector promotes the health care system and our longevity. Therefore, this study considers the different forms of fiscal authorities (forms of government) as they are responsible as agents of the populace either as appointed or elected officials to administer social income.

2.0 Literature review

2.1 Public capital expenditure on health and life expectancy

The public capital expenditure is the expenditure from government for the provision of public goods and services particularly in the health sector based on the context of this study. One of the key determinants of the impact of public budget on the public sector is the average life expectancy as well as the mortality rate. The world health organization defines health as a

“state of complete physical mental and social wellbeing and not merely the absence of disease or infirmity”.

Life expectancy at birth is an important demographic indicator that depicts the average number of years a new born child is expected to live given the current challenges and this indicator is derived from the age specific mortality rates, which paints a picture of the overall health status of a population as well as allowing for investigating the longevity of women and men life expectancy in the population of Nigeria as 56 years females and 53 years for males and 54 years for both female and male (NBS, 2013) The United Nations Educational security and cultural organization has in the earlier presentation of the human development index stated an average minimum of Twenty (20) years and maximum of eighty five (85) years as global life expectancy (UNESCO,2018). IMF (2019), stated that the output of the health system is expressed either by longevity indicators such as life expectancy or mortality rates. The countries with higher income per capita levels are expected to have a higher life expectancy rate than countries with lower per capita income. Onoferi ,*et al* .(2021),stated that the peoples ‘need for health increased and health outcome indicators are influenced by dimension of public reforms and related governance framework ,designed and planned considering the diversity of the health care system that is directly reflected by the degree of public expenditure. Onoferi, *et al* . (2021), stated that there existed a strong positive relationship between government health expenditure and longevity, measured by life expectancy at birth. An increase in the overall public health spending reduces the overall

mortality level of population. A percent increase in public expenditure on health is associated with a decrease in infant mortality rate by 0.64 percent. They opined that Economic performance also positively affects the well-being of European Union (EU), developing countries and a higher real Gross domestic product (GDP) growth rate is related to highest life expectancy (Onoferi, *et al.* 2021). An increase in health expenditure is associated with increase in life expectancy and it's in order models, and increase in the overall public health spending reduces the number of the overall mortality level of a population. The Nigerian situation as expressed in the table 6 isn't in total compliance to the propositions that an increase in public health expenditure reflects on the average life expectancy because there is no direct or proportional increase of life expectancy to increase in public spending on health as reduction in most years records an increase in life expectancy and vice-versa.

This however, violates the assertions of Onoferi, *et al.*(2021),Ogumbenle, *et al.* (2021),Alhassan, *et al.* (2018)UN vision 2030,world health organization(WHO) world report, who asserted that increased public spending on health reduces infant mortality and occasioned longevity with a 1percent increase life expectancy will directly cause a significant increase in GDP at 3.16 and 3.85 percent in the long-run and short-run respectively adverse effect occurs when there is an increase in the death rate as a 1% increase in the death rate will cause a significant reduction in the GDP by about 1.84 percent and 1.54 percent in the long-run and short-run respectively even with agreement made by African rulers in 2001 to focus on health expenditure to achieve the health millennium development goals

(MDG's) to raise the economy of Africa. Furthermore, a Fifteen (15) percent of government's expenditure is to be allocated to the health sector to attain this goal but by 2013 only five (5) countries accomplished target namely Botswana, Rwanda, Zambia, Madagascar and Togo up till 2021 budget. Nigeria is yet to meet the 15 percent total public expenditure on Health. World bank (2017), affirms that Africa and particularly west Africa expenditure on health has increased with no increase in life expectancy of the population. Sango-Coker and Bein (2018), life expectancy is low within populations that have low incomes, as many needs are not met due to low financial resources, hence the World Health Organization implore government to intervene using strategic management to reduce the health care system unmet needs.

Health expenditures reflect the value a society places on health for health care, the available resources for health care and the way these resources are used. Growing literature show a clear link between health expenditure and health outcomes. What remains unsolved is why countries with similar levels of health expenditures experience different life expectancy outputs. However efficient utilization can prove life expectancy other than increase in the allocative capacity (Zarulli, *et al.* 2021).

2.2 Theoretical framework

The study is anchored on the following theories with the Theory of public expenditure as its anchor theory.

2.2.1 Theory of public expenditure

The theory of public expenditure by Adams, H.C (1895), states that the aim of public expenditure is to discover the meaning of

expenditures for the life of a people and in this manner to arrive at the principles which centres appropriation. A distribution of public funds between the various lines of services unshaken by the state also is in a general manner determined by the same considerations as influence individual expenditures. That as a poor man’s income is expended on the necessities rather than the comfort of luxuries life, so the poor state would be called upon to make larger relative expenditure for the primary governmental functions.

2.2.2 Agency theory

Jensen and Meckling (1976), stated that the agency theory resonates from the separation of ownership and control in Modern Corporation which creates a principal-agent relationship evokes transfer of trust and duty to the agent with the belief that the agent is opportunistic and will pursue interest including executive fraud, which antagonizes interest of the principal. The theory therefore pressures tension between the agent and principal, necessitating the latter to put in place mechanisms that will constrain the former from engaging in activities that are

inimical to the existence of the organization (Tsegba and Upaa, 2015).

3.0 Methodology

The study adopted the Expo-facto research design. The population of the study include the 36 states of the country and the FCT. The sample of the study using the convenience sampling is published statistics from the federal ministry of finance (FMF), central bank of Nigeria (CBN), the federal ministry of health, federal ministry of education, national bureau of statistics and the world bank group. The study employed the use of the statistical package for social sciences (SPSS – Windows), to analyse data with the use of coefficient of determination(R²), linear regression and Anova to test the hypothesis. The model for the study and the decomposition of the variables for data analysis is as shown below;

$$Lif_{Exp} = f(CapbgtH) \dots\dots\dots ii$$

Where;

CapbgtH = Capital budget heath

Lif_{Exp} = Standard of Living

α_i = other lurking variable

4.0 Results and findings

Table4.1: Public capital expenditure on health and life expectancy in Nigeria

PRE-DEMOCRATIC ERA					DEMOCRATIC ERA				
Year	Capital Expenditure on Health	Total Budget (N billion)	Percentage of Total budget (%)	Life expectancy	Year	Capital Expenditure on Health (N billion)	Total Budget (N billion)	Percentage of Total budget (%)	Life Expectancy
1984	51.10	182.30	1.84	46.01	1999	7,386.30	161,180.00	4.39	46.10
1985	56.20	255.60	1.96	45.99	2000	8,805.60	20,385.20	6.20	55.02
1986	65.50	309.50	1.91	45.98	2001	20,128.00	44,651.20	3.24	46.51
1987	59.20	124.20	0.56	45.96	2002	12,608.00	63,171.20	3.79	46.84
1988	155.40	578.20	2.08	45.95	2003	6,431.00	39,685.50	4.36	47.24
1989	221.50	796.80	1.94	45.93	2004	18,207.60	52,406.10	5.10	47.72

PUBLIC CAPITAL EXPENDITURE AND LIFE EXPECTANCY IN NIGERIA: A PRE-DEMOCRATIC AND DEMOCRATIC ERA ANALYSIS

Oru, et al.

1990	322.50	832.20	1.47	45.92	2005	21,000.81	76,001.50	7.54	48.25
1991	153.10	771.30	2.94	45.90	2006	38,04.00	94,000.50	4.30	48.81
1992	384.10	1,380.50	2.78	45.89	2007	51.17.00	177,001.80	4.8	49.37
1993	1,563.00	3,894	2.67	45.87	2008	49.37.00	3.2	4.3	49.91
1994	2,405.70	4,472.50	1.43	45.90	2009	50.8	3,05,000,00	4.8	50.42
1995	3,307.40	6,642.90	1.71	45.92	2010	49.37	4,212,572,611,532	3.9	50.90
1996	1,659.60	4,835.10	2.80	45.95	2011	33,527,630,328	4,776,191,559,259	4.7	51.35
1997	2,623.80	7,326.10	1.71	45.97	2012	57,902,569,689	4,648,849,156,932	5.8	51.79
1998	8,307.20	13,640.80	2.91	46.00	2013	60.08	4,924,604,000,000	5.7	52.23
					2014	49,517,386,725	4,695,180,000,000	5.6	52.67
					2015	227,68,742,847	4,493,363,957,158	5.8	53.11
					2016	28,650,000,000	6,077,680,000,000	4.1	53.54
					2017	55,609,880,120	7,441,175,486,758	5.1	53.95
					2018	86,485,484,198	9,120,334,988,225	3.9	54.33
					2019	57,009,000,000	8,33,000,000,000,	4.75	54.69
					2020	51,040,379,895	10,509,654,033,053	3.83	55.02
					2021	134,074,025,027	13,08,000,000,000	4.81	55.12

Source: BudGIT, FMF, world bank, CBN annual report and statement of account 1968-2007, National bureau of statistic, 2022,2016, 2015.

4.1.A Capital expenditure on health an average life expectancy – Pre-democratic era

Table 4.1.1A Descriptive statistics

	Mean	Std.	N
Life Expectancy	45.9089	.15177	15
Capital Budget on Total Budget	1207.2056	2057.9665	15
Percentage of Budget	2.1850	.76992	15

Source: SPSS 25

Table4.1.2A Correlations

		Lif _{exp}	CapbgtH	Tbgt
Pearson Correlation	Lif _{exp}	1.000	.169	.186
	CapbgtH	.169	1.000	.976
	Tbgt	.186	.976	1.000
	%Tbgt	.031	.124	.119
Sig.(1-tailed)	Lif _{exp}		.251	.230
	CapbgtH	.25		.000
	Tbgt	.23	.000	
	%Tbgt	.452	.312	.319
N	Lif _{exp}	18	18	18
	CapbgtH	18	18	18
	Tbgt	18	18	18
	%Tbgt	18	18	18

Source: SPSS 25

Table 4.1.3 A Correlation

		Percentage of Budget
Pearson Correlation	Lif _{exp}	.031
	CapbgtH	.124
	Tbgt	.119
	%Tbgt	1.000
Sig.(1-tailed)	Lif _{exp}	.452
	CapbgtH	.312
	Tbgt	.319
	%Tbgt	
N	Lif _{exp}	15
	CapbgtH	
	Tbgt	15
	%Tbgt	15

Source: SPSS 25

Table 4.1.4A ANOVA

Model		Sums of squares	Df	Mean Square	F	Sig.
1	Regression	.015	3	.005	.183	.906
	Residual	.377	14	.027		
	Total	.392	17			

Source: SPSS 25

a. Dependent Variable: Life Expectancy

b. Predictors: (Constant), Percentage of Budget, Total Budget, Capital Budget on Health

Table 4.1.5A Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	45.880	.123		373.585	.000
	Capital Budget on	-1.876E-05	.000		-.213	.834
	Total Budget	1.808E-05	.000	.433	.363	.722
	Percentage of Budget	.002	.052	.011	.041	.968

Source: SPSS 25

4.2 B Capital Budget on Health and life Expectancy -Democratic Era

Table 4.2.1B Descriptive Statistics

	Mean	Std.	N
Life Expectancy	287.907	1136.635	23
Capital Budget on	250689220	358131756	23
Total Budget	2.7542E+	3.32096E+	23
Percentage of Budget	48178	.96458	23

Source: SPSS 25

Table 4.2.2B Correlations

		Life	Capital	Total
Pearson Correlation	Life Expectancy	1.	.16	.51
	Capital Budget on	.16	1.00	.50
	Total Budget	.51	.50	1.00
	Percentage of Budget	.223	.034	.121
Sig. (1-tailed)	Life Expectancy	..	.233	.006
	Capital Budget on Health	.233		.007
	Total Budget	.00	.00	

	Percentage of Budget	.154	.439	.291
N	Life Expectancy	23	23	23
	Capital Budget on	23	23	23
	Total Budget	23	23	23

Source: SPSS 25

Table 4.2.3B Correlations

		Percentage of Budget
Pearson	Life Expectancy	-.223
	Capital Budget on	-.034
	Total Budget	-.121
	Percentage of	1.000
Sig.(1-tailed)	Life Expectancy	.154
	Capital Budget on	.439
	Total Budget	.291
	Percentage of	
N	Life Expectancy	23
	Capital Budget on	23
	Total Budget	23
	Percentage of	23
	Budget	

Source: SPSS 25

Predictors:(Constant),PercentageofBudget,CapitalBudgetonHealth,TotalBudget

a. Dependent Variable: Life Expectancy

Table 4.2.4B ANOVA

Mod I		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	8471023.74	3	2823674.58	2.68	.07
	Residual	19951685.86	19	1050088.68	9	5
	Total	28422708.84	22			

Source: SPSS 25

a. Dependent Variable: Life Expectancy

b. Predictors:(Constant),Percentage of Budget,CapitalBudgetonHealth,TotalBudget

Table 4.2.5B Coefficients^b

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	772.61	1156.40		.668	.512
		-3.894E-	.00		-.552	.587
	Capital Budget on	1.891E-	.000		2.469	.023
	Health Total	-	228.28	-.123	-.826	.419
	Budget	188.462	4	.553		
	Percentage of			-.160		
	Budget					

Source: SPSS 25

4.2 Discussion of findings

In the pre-democratic era, mean of life expectancy is 45 years and a mean budget of 1207.20 with standard deviation of 0.15177 indicating very high uniformity of the life expectancy with the 7.96 indicating a wide variation and less uniformity in the capital budget on health. The percentage of the budget mean is 2.1850 with a less variable standard deviation of 0.76992. The capital budget on health has a positive but non-significant impact on the life expectancy in the era as revealed by a correlation of 0.169 and the percentage of the health budget has a 0.31 positive but non-significant impact on life expectancy in the era. This agrees with the findings of Panam and Livinus (2020), Ebotemhen and Hezekiah (2020), also with Nuhu (2022), except with slight variations from him not stating if it is significant or not. This study also disagrees with Nuhu (2022), who stated that per capita income had positive effect on life expectancy as against capital and recurrent expenditures on health. The capital budget on health is non-significant at 0.312 and the percentage at 0.452 at one-tailed, thus the percentage of the budget is more significant to the capital expenditure on health. The model summary is significant at 0.194, coefficient of determination 0.038 at an error estimate of 0.10405 with a change of

0.183 for capital expenditure to life expectancy. A Durbin – Watson of 0.845 reveals a positive autocorrelation with an F change rate of 0.906 which is very significant. The ANOVA has a sum of squares of 0.015 and mean squares of 0.005 which reveals very strong uniformity between variables and F value of 0.183 which is non-significantly positive at a high significance level of 0.901 and reveals that there exists a positive between the variable. The residual of 0.377 indicates over 70% certainty of the result. The coefficients represent a negative impact between the capital expenditure on health on the life expectancy of Nigeria because as the budget is increased the life expectancy doesn't increase or in proportion to the change as seen by 2.13 t-value and very significant at 0.83. The tolerance level and variance of 0.48 and 20.745 reveals a comfortable tolerance but the 20.745 variance inflator revealed a possible multi-collinearity problem but at this instance the partial correlation is used as a correction model to proof from the 0.057 correlation that there existed a negative relationship between the budget and life expectancy proofing issues of conflict between the phases of budget execution to accountability.

The correlation coefficient proves negative relationship between capital budget of health and the percentage of the health budget of – 0.36 and

a correlation of 0.009 to the total budget which is highly non-significant. The Eigenvalues and condition index values of 3.077 and 12, 608 respectively confirm the absence of multi-collinearity problem.

Summary, there exist a positive but non-significant relationship of 0.169 within the era between the capital budget on health and life expectancy as well as a negative relationship between the budget percentage to the life expectancy in the era with an average life expectancy of 45.33 in the era which reveals issues of execution to accountability as well as a positive but non-significant budget on health to budget total at 0.119 level.

In the democratic era, the mean is 287.9074 for life expectancy with a wide variation 1136.63596 and 25068922058 as mean value of capital budget on health with a wide variation (standard deviation) of 35813175632 revealing a lack of uniformity and wide scatter between the life expectancy and capital budget on health. Pearson correlations reveals a positive and non-significant relationship of 0.160 between capital budget on health and life expectancy in Nigeria at the democratic era (1999-2021) and a positive and significant relationship of 0.5 between capital budget on health and budget total but a negative and non-significant relationship between percentage of health budget and life expectancy of -0.223 this is not in consonance with Panam and Livinus (2020), Ebhotemhen and Hezekiah(2020), also with Nuhu (2022) and -0.121 to the total budget. The capital budget on health is the most significant at one-tailed with at 0.439 level. The model summary is strong at a coefficient of 0.546 and a coefficient of determination of 0.258 at a 0.075 significant level.

The Durbin-Watson of 1.366 reveals no auto-correlation between the variables and thus the absence of multi-collinearity issues. The ANOVA has an F – value of 2.689 which is very strong at a 0.075 level of significant further

proofing the reliability of the result after the Durbin-Watson Test. Under the coefficients, there exist a t-value of -0.552 which reveals a negative and significant relationship between the capital budget on health and life expectancy and a very strong negative relationship between the percentage of health budget and the life expectancy of Nigerians. The tolerance rate and the vector inflator factor on the collinearity statistics reveals the absence of multi-collinearity amongst the variables on the coefficient correlations, the percentage of budget on health is negatively non-significant at -0.031 to the capital budget on health and -0.501 on the capital budget on health to the total budget as life expectancy is dependent on them.

The collinearity diagnostics of Eigenvalues, condition index and variance proportions all indicate the absence of multi-collinearity between variables. The era has an average life expectancy of 55.02 years

5.0 Conclusion

After collecting data and undertaking both descriptive and inferential statistical analysis on the data from the health sector of economy, the study concludes that the pre-democratic era fared-well in the health sector haven increased life expectancy by 0.09% against the democratic era. The study also revealed a positive impact of the health budget to total budget in the pre-democratic era and negative in the democratic era. This reveals more control problems (from execution to accountability phases) in the health sector in the democratic era. The study therefore recommends an increase in the capital expenditure to the health sector as much as possible with the target of attaining the recommended 15 to 20 percentage for the health sector as proposed by the United Nations economic, social and cultural organization (UNESCO) for developing economies within her medium-term expenditure framework (MTEF). The study also recommends amongst others the dire need for expenditure control to

avert undue interference on approved expenditures from the execution to accountability phases of the budget cycle.

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